Thyme and Thyme Again

Stephen F. Hamblin

One of the many interesting and puzzling groups of garden plants is the genus Thymus. We are not sure whether they are woody or herbaceous plants, but as the woody stems with evergreen leaves persist through the winter they can be considered as low evergreen shrubs. Yet when the tops are killed by winter the plants are perennials. Rehder's Manual describes but few species, but at least 35 species is a minimum estimate. Some 250 "species" names are listed in the Index Kewensis, and perhaps 50 "species" and as many "varieties" are in American gardens. Of 600 total names in the Index Kewensis more than half are synonyms, and at least 170 names refer to *Thymus serpyllum* alone.

There is no monograph on this genus, nor critical comparison of species characters in any present book on botany. Dealers and amateurs have no guide by which to identify species, and endless unnamed forms appear from self-sown seedlings in any collection. The names in dealers' catalogues may mean very little, and unnamed forms are simply orphans.

No plants are native to America, and the center of distribution seems to be in the mountains of eastern Europe, with species native to Spain and North Africa and others in China. Frequently the unfamiliar labels on new plants are but of a form of the abundant *T. serpyllum*. In case of doubt consider that your "new" plant is but a form of this common and variable species. A few hybrids are known, and some plants truly belong to related genera, as *Micromeria, Calamintha, Origanum, Ziziphora,* etc. All species are theoretically hardy in regions of much frost, but some species are not always hardy in New England, particularly in soils somewhat wet. All species like dry sunny sites and thrive in poor soils even in long summer droughts.

A simple classification is by habit of growth: those like little erect trees without basal runners, and those creeping in mat formation. Of the erect type most common is Common Thyme (*T. vulgaris*), an erect little shrub to a foot, somewhat of the habit of Lavender. The twigs are whitened, rather stiffly erect. The leaves are very narrow, opposite, held rather erect, dull green to grey green in color. In very cold climates, or under exposure to winter winds, many of the leaves are deciduous, and even the twigs may kill back. The flowers are rather small, lilac in color, in small interrupted spikes in June-July. Thus the plant look like a small Rosemary. Native to southern Europe, it has been grown in gardens since the beginning of gardening, particularly as a flavor for foods. Since it is a tiny wiry tree it makes no new basal growths. Thus it may be short-lived, and new plants are produced by layers or cuttings. For uses as an herb there are such varieties as Narrowleaf French and Broadleaf English, with leaves more shiny than of the type. Var. *fragantissimus* and *variegatus* are listed, but seem not available.

Another very erect little shrub is Zygis Thyme (*T. zygis*), like a miniature Heather to 6 inches. The leaves are very small, narrow, deep green, with strong Thyme odor. The flowers are small, rosy purple, in small heads in June. Native to Spain and Portugal, it is not truly hardy in sub-zero winters, but it is as hardy as Lavender.

Slender Zygis Thyme (var. *gracilis*) is very slender, the branches decumbent and often rooting. The leaves are small, very fleshy, deep green, in effect of a dwarf green Lavender slightly limp in habit. The flowers are small, white, in loose whorls in June. The plant has a definite turpentine odor.

Winter Thyme (*T. hyemalis*) is like to Common Thyme, a foot tall, very branched, the many narrow leaves pale green with recurved edge. It looks very like a small Rosemary, dyed pale green. The flowers are palest pink, in narrow whorled spikes in June. Native to Spain, there is a limit to its hardiness in northern winters. It is not strongly fragrant, and resembles a small plant of Hyssop.

Pepper Thyme (*T. piperella*) is a tiny erect fleshy bush, with tiny ovate shining leaves of peppery mint odor. The flowers are large, few, of deep pink color. The effect is as of a tiny Savory. These are the list of the tree-like species known to be in gardens in this country.

Mother-of-Thyme (*T. serpyllum*) is the usual creeping sort and endless are its forms. Some forms are but an inch or two tall and the other extreme is a wiry shrub nearly a foot high. It forms large mats in dry and stony soils, creeping rapidly and seeding itself widely. As a species it is native from western Europe to Eastern Asia. Geographic varieties are listed by botany, and varied garden forms appear in every garden. The leaves may be large or small, clear green or gray downy; the flowers white, purple or red, in small clusters or in several whorls; and the date of bloom will vary from early June to late summer. The only way to keep a plant true to original form is by division of the matted clump.

Many forms have clear green foliage, without hairs, or hairy only on the leaf margin. One of the most dwarf forms is White Mother-of-Thyme (var. *albus*), scarcely an inch high, the leaves very pale green, hairy only on their edge. The pale green color holds all the year. In June-July there are tiny pure white flowers in small whorls. This plant is very aromatic and one of the best of the dwarf forms. Rarely there are taller forms with white flowers, different from the dwarf variety. PINK CHINTZ has the flowers both pink and white in the same cluster; late bloomer.

The var. *micans* is equally dwarf, with very narrow pale green leaves, shining green, with few flowers, pale purple in color. The odor is of floor varnish. Perhaps it is a true species. ANNIE HALL is also very dwarf, bright green in foliage, the flowers pink.

Taller, some 2-3 inches high when in flower, are such as var. *carmineus* (Carmine Mother-of-Thyme) with smooth deep green foliage, the flowers deep rose purple in late June; Scarlet Mother-of-Thyme (var. *coccineus*) differs in flowers deep scarlet; Purple Mother-of-Thyme (var. *purpureus*) has deep purple flowers, darker than usual; Rose Mother-of-Thyme (var *roseus*) has small flowers of pale pink purple, early in June; Red Mother-of-Thyme (var. *ruber*) is pure crimson near spectrum red; Firefly Mother-of-Thyme (var. *splendens*) is a bright rosy purple. Other color variations can be named.

Mountain Mother-of-Thyme (var. *montanus*) is larger in every way than the usual species, rising to 6 inches, the leaves large, clear green, the pale rose-purple flowers in large heads. Roundleaf Mother-of-Thyme (var. *nummularius*) has wide rounded leaves, a sort of wiry Moneywort. Its flowers have not been noted.

Lemon Mother-of-Thyme (var. *vulgaris* or var. *citriodorus*) is a tall wiry

type growing even to nearly a foot tall, with rather woody stems, a bit like *T. vulgaris,* but with many stems rather than one main trunk. The oblong leaves are dark green, with strong lemon odor. The flowers are rose-purple, in July, often not numerous. This is a distinct variety and very popular; the pure lemon odor is the special character. There is a variety with the foliage very pale yellow-green.

The variegated forms of this species are usually rather tall sorts, though temporary colorings of foliage may be found in the dwarfer forms. Whiteleaf Mother-of-Thyme (var. *albo-marginatus*) has the edges of the leaves pure white. SILVER QUEEN (var. *argenteo-variegatus*) is very tree-like to a foot, the small narrow pale green leaves irregularly edged white, or nearly wholly white on some twigs. Rarely does it bloom, but its silvery color is very attractive. Silver Mother-of-Thyme (var. *argenteus*) is another silver form, perhaps not different from SILVER QUEEN. Whitespot Mother-of-Thyme (var. *variegatus*) has white dots within the pale green of the foliage. Golden Mother-of-Thyme (var. *aureus*) has its young twigs yellow, and many of the smaller leaves remain clear yellow, but turn in summer to light green. This holds its color well in spring and autumn, giving a definite golden effect. The flowers are few, purple. This was formerly much planted at the base of sundials, for "Time is golden."

These silver and golden variations may appear on parts of any plants, to be separated and propagated by cuttings. Keep in fullest sun and give little plant food. At times they will produce twigs of normal green foliage, and these should be taken out at once.

With green foliage, but softly downy, there are several forms. Dainty Mother-of-Thyme (var. *pulchellus*) is a low grower, the small oval leaves softly green hairy. The pale rose-purple flowers are in round heads early in June. The odor is not strong and the plant is unlike the usual type in the many soft green hairs. Lilac Mother-of-Thyme (var. *cinereus*) is softly downy, the flowers pale lilac. Var. *carnosus* is very dwarf, the leaves dark shining green, but very green hairy when young. The flowers are pale pink-purple in early June. Note that the young seedlings are very soft hairy. Many other seedlings are very hairy downy, but green in color.

But some forms are not only downy, but gray downy — not green at all. Most distinct is Woolly Mother-of-Thyme (var. *lanuginosus*), very flat on the ground, very gray downy, reddish in winter's cold. The flowers are rare, bright rose-purple in early June. There is very little odor. It is a distinct mat of woolly gray foliage. Var. *lanatus* is similar, less compact and not as gray, for the green color shows somewhat.

Downy Mother-of-Thyme (var. *villosus*) is also more loose in habit, very gray in color, but less downy, in creeping mat. Usually it blooms freely in June, soft rosy-pink just above the gray foliage.

Some of the listed varieties are little seen or known, or else at times are not true to name. More notes are needed on such as var. *balticus,* var. *ericaefolius,* var. *kotschyi,* var. *latifolius,* var. *maximus,* var. *minor,* var. *ochrus,* var. *squarrosus,* etc. Other plants often listed as varieties are more properly true species, as var. *chamaedrys* is *T. glaber*; Var. *britannicus* is *T. britannicus*; Var. *marschallianus* is *T. marschallianus*; etc.

Very like to *T. serpyllum* are other species in endless list. First, those with smooth green foliage. British Thyme (*T. britannicus*) is a dwarf creeper of hairy green foliage. How it differs

from *T. serpyllum* only botany can say. *T. azoricus* is another creeper, shining green. Apparently it is only a form of *T. serpyllum*, and it is not as hardy as the type. *T. pannonicus* is quite erect, but still in loose mat. The tiny oblong leaves are dark green, hairy only on the edge. close heads of pink-purple flowers appear in mid-June. It has the usual Thyme odor. Carpet Thyme (*T. przewalskii*) is the form of *T. serpyllum* from eastern Asia, but scarcely different from the European plant. Tiny Thyme (*T. caespititius*) is a minute plant with tiny narrow leaves found in wet moors in Spain and Portugal. Apparently it is hardy, but it likes not the long droughts of American summers.

Conehead Thyme (*T. capitatus*) has narrow stiff leaves, but the flowers are in close heads, bright lilac, like a small clover. This is very distinct in flower form. Scandinavian Thyme (*T. glaber* or *T. chamaedrys*) is in dense thick mats with oblong deep green leaves, very smooth and shining. The plant looks like some of the Australian Veronicas. The flowers are large, in large oblong heads, light rose in color, in effect of a pale Crimson Clover, in late June at 4 inches height. It is a very showy species in flower and distinct in its foliage. It is very hardy, and a robust grower, common in Europe. *T. jankae* is similar, but taller (to 8 inches), in large loose mat, the leaves large, oblong, dark green and smooth. The flowers appear in late June in rounded heads of lilac color. The plant is not unlike the usual *T. serpyllum*, with a strong odor of floor varnish.

Caraway Thyme (*T. herba-barona*) is a slender prostrate plant, rather bare of foliage, in thin creeping mat, the whole plant with strong and special caraway fragrance. Native to Corsica it is fully hardy and has been widely planted.

Redstem Thyme (*T. cimicinus*) is a very slender wiry plant, the twigs definitely red in color. The few leaves are narrow, normal green, with strong odor of some powerful disinfectant, or a rancid formic acid. It has the worst odor of any Thyme.

T. marschallianus has pale green stems, rather coarse, upturned to 6 inches. The leaves are an inch long, pale green and quite downy. The flowers are palest pink, very small, in long whorled spikes in June, like a dwarf Catnip. The odor is as of musty old wood—very different from most species. Usually it is listed as a form of *T. serpyllum*. Pungent Thyme (*T. odoratissimus*) is also very wiry in a tangled heap to 6 inches. The leaves are narrow and long, soft green hairy. The flowers are purple in large clusters, like a robust state of *T. serpyllum*. The Thyme odor is very strong, but pleasant. *T. comosus* is supposedly another form of *T. serpyllum*, in loose tangled mat of downy green foliage. The flowers are a soft pink in enormous oblong heads with colored bracts, like test-tube cleaners dyed pink, in July. There is also a var. *haynaldi*, the form most seen. In bloom it looks like no Thyme, for the tubular plumes of silken threads are of some strange clover. When not in bloom it is another green downy Thyme.

The species with gray-green foliage are several. Woollystem Thyme (*T. lanicaulis*) is a stout plant in stem, in tangled mat to 8 inches, all parts of the plant softly gray downy. The narrow leaves are covered with a gray wool, the most wool-like of all species. The pale pink flowers are quite large, in dense oblong heads in June, perhaps too pale to show off well against so much gray foliage. The odor is strong of camphor, unlike that of any other species.

Sicily Thyme (*T. nitidus*) stands quite erect as a dense shrub, but the little oblong leaves are silvery, not hairy. It is like a minute erect silvery Yew with Thyme odor. Rosy-lilac heads of flowers appear in July. Although found in Sicily, it is quite hardy.

Hairy Thyme (*T. hirsutus*) is tufted erect, the leaves softly hairy. The flower heads are pink. Native to the region of Greece, the growth is like a small Galium. *T. cephalotes* grows as a dense dwarf shrublet to 6 inches. The little leaves are gray downy. Deep pink flowers appear in close flattened Armeria-like heads, with large purple bracts. There is a strong odor of camphor. This is another distinct Thyme, from Spain.

Thus are portrayed samples of the varied forms taken by Thyme, from tiny green or gray mat to tumbling tangle of wiry stems or erect shrublets like an Australian Veronica. When botanical search can begin again in Europe it will be possible to get seeds of many species not yet tried in this country.

Gardens an Important Cog in German Food Supply

WILBUR H. YOUNGMAN

The food situation in Germany currently focuses considerable attention upon the small gardener and his contribution to the food supply. Farm production seemingly has been expanded to the limit. The same is believed to be true of the commercial truck growers, but the food supplies still fall materially below the needs of the greatly increased population of the U. S. Zone.

The Office of Military Government and the German Civilian agencies are turning to the gardeners, urging that all who can have gardens. This is unnecessary advice after the recent cut in rations which in April was down to 1275 calories and have since reached a new low of 1075. Several cities have appointed official garden leaders to assist the gardeners in obtaining land and to guide the inexperienced so that their efforts may be productive.

These moves are essential if the people of Germany, particularly in the U. S. Zone, are to produce the major part of their food supply. The U. S. Zone is not an important surplus producing agricultural area. Bavaria does produce a small surplus but not enough to meet the needs of Gross Hessen and Wuerttemberg-Baden, the other two states in the zone. Actually the farmers of the U. S. Zone are producing about as many acres of food crops as they can, but with the tremendous increase in population, the food situation can never be easy in the U. S. Zone, which is better known for its scenery than for its grain crops. With the influx of evacuees from the eastern German States and 2¼ million expellees from the Sudetenland, the food situation is critical.

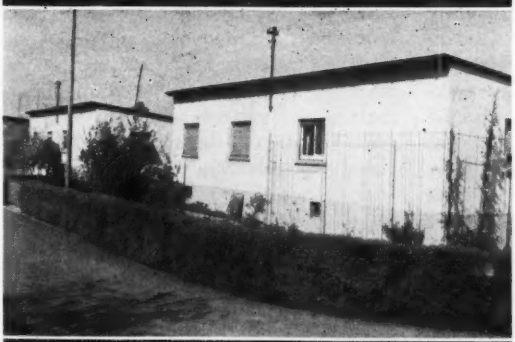
Perhaps, it would be possible to increase food production in the Zone by changing to more intensive crops, by increasing crop yields by making more fertilizer available, and by providing larger quantities of new seed potatoes. Even with these changes it is doubtful if total production could be increased sufficiently to meet more than a part of the greatly increased requirements.

The same might be said of the commercial truck growers of which there are a considerable number in the U. S. Zone. Lack of fertilizers and labor have been reported as major reasons why their production is not being maintained at a high level. It is not known to what extent suitable soils and equipment are available to permit expansion in this field of production. Certainly, it is an important type; one of the most intensive, and it has been highly developed in Germany.

I believe we can assume that the Nazis, in their efforts to make Germany self-sufficient in food, did not overlook many opportunities to increase the production of feed. On the other hand, we may question the attention given to the growing of such crops as wheat, rye and barley which are better adapted to extensive farming areas where large scale methods of production can be employed.

The third source of food, the private garden, was also highly developed under the Nazi regime. They made considerable of the Kleingaertner, small gardeners who leased land from the cities. They are well organized and

Dwarf fruit trees properly trained furnish fruit, shade, screen and boundary markers.



Many groups of duplex houses, the fruit of the 1929-30 depression may be seen, though not all are as neat and substantial.

Rabbits, chickens, even goats and cows are kept by the Small Settlers according to the size of the plot. In cities, rabbits and chickens with vegetables and fruits supply much of the family food.

U. S. Army Pictorial Service. All views are from Frankfurt, Germany.

are to be found in considerable numbers in each city. This group of gardeners whose origin dates back to 1880 when a German physician named Schraeder, recognizing the importance of healthful out-of-door exercise for the workers as well as the nutritional values of fresh vegetables, organized the movement. It spread to the large cities and was widely adopted as a civic program. About 1936 the Nazis took over the then-called Schraedergarten associations, changed their name to Kleingaerten and made them a part of the Nazi program.

These small gardens are for the most part on city-owned property which is leased to them for a considerable period of years, sometimes on an indeterminate lease at low rates. The annual charge, in many cases, is as low as 3 marks per 100 square meters. In a few cities, or in the more desirable locations, rentals may run as high as 7 marks per 100 square meters. Thus the total cost for an average sized plot of 300 sq. meters (3,229 sq. ft.) ranges from 90c to $2.10 at the present rate of exchange.

The plots, usually numbering more than 100 in a unit, vary in size from 150 to 700 square meters. The average size is believed to be about 300 square meters. Location, soil and size of family are supposed to be taken into consideration in setting the size. However, the methodical German engineer wants everything done according to rule so he lays out an entire unit, sets the stakes and puts in the pipe lines for water without knowing anything about the families who will be assigned the plots. Hence individual requirements probably have little bearing upon the size.

Frankfurt has probably gone further with the Kleingaerten than any other city. With over 50,000 plots within the city limits they are far ahead of any other city in the U. S. Zone. They have studied the demand and are controlling the expansion of the city in line with their plans. Each group of apartments is so placed as to be surrounded by or at least be accessible to a group of Kleingaerten. They claim from their experiences that only one family out of 4 can be interested in gardening. However, this ratio has been materially altered by the current food situation.

Frankfurt, as well as all other cities in the U. S. Zone, admits receiving each day many requests for garden space. Unfortunately, few of these cities have been able to meet the demand. Frankfort may have been more successful since they have modified their methods to meet the situation. Instead of just one type of Kleingaerten, those on indefinite leases, they now have three types. 1. The long time lease, land which is permanently set aside by the city for such use. 2. Land which will not be needed for a few years and so can be leased for 5 years. 3. "Grabeland," land for emergency use only from which the tenant may be removed on very short notice. Consequently he is not permitted to plant fruit trees, erect a shelter or to fence it in. This studious approach to the garden program was not encountered in any other city within the Zone.

In spite of the large number of Kleingaerten in Frankfurt and other cities of the Zone, it is hardly wise to assume that they will each support a family providing them with all of the vegetables needed for a year. Too many of them are over-grown with fruit trees. It is not uncommon to see a 25-year old apple tree, several of them usually, spreading over the entire plot and effectively shading the ground beneath so that only the earliest of spring vegetable crops can be grown. Of course there are many plots in the

Kleingaerten where the dwarf fruit trees are carefully espaliered to fences or trellises. Even the gooseberries are commonly grafted to root stocks three or four feet above the ground, which permits the growing of lettuce, onions or other crops beneath them. Where this is done a generous supply of vegetables can be obtained from the average sized plot.

Similar to, but developed for a different reason, are the Small Settler plots, subsistence homes we would call them. The German name is Kleinsiedler. They are small plots of ground with simple but substantial houses which were a product of the 1929-33 depression. Usually on city-owned property, the settler, while owning the house, pays a nominal rental for the land. In Frankfurt the leases are for 40 years, while in Stuttgart the leases run for 99 years.

The small settler plots range in size from 300 square meters to 2½ acres in size. This range is due in part to location but more often to the keeping of animals. Some settlers keep a cow or goats. Others are satisfied with a few chickens or rabbits. All are well supplied with space for vegetables and fruit trees.

The houses in the Stuttgart settlement were built by the settlers who worked in teams under the leadership of a skilled worker. They were built at an average cost of about $2,400. The houses visited in Frankfurt were built by the city, averaged higher in cost and were more pretentious.

It is not expected that this type of garden program can be expanded to meet the present food shortage due to lack of building materials, although it may have to be expanded to meet the acute housing need brought on by the unwelcome evacuees and expellees. If this is done there will be a corresponding increase in gardens, but in most cases this will be at the expense of the farm land taken for the settlement. However, this may not be a net loss in food production, as gardens with ordinary good culture should produce more calories of food per hectare than similar areas devoted to wheat.

There are organizations of railway employees parallel to these two groups. They are widely distributed, effective gardening groups. It might easily be assumed that they would have gone out of existence during the war for their gardens were along the railway right-of-way, the most bombed ground in Germany. Even the housing settlements of the railway workers are often adjacent to the tracks, consequently they suffered severely and often. Today, the railway employees are gardening just as feverishly as those whose plots received less attention from allied bombers.

The third major group of gardens, those on private property to which we will refer as home gardens, is the largest in number. While there are no statistics on their numbers today as compared to pre-war or during the war, it is evident that every home owner with a spot of ground is trying to grow some vegetables. Even the space between the building and the sidewalk is spaded if there is enough soil and sunlight to encourage plant growth.

It might well be assumed that the backyards filled with rubble might prove too discouraging to the few families still living in the wreckage. This would be under-estimating the seriousness of the food shortage. Gardens are being cultivated under all manner of handicaps. Imagine planting a garden on a spot that was, before a bomb exploded, covered by your home. Yes, there are home gardens everywhere—everywhere that a few square feet of ground can be found which are not too heavily shaded. As more rubble is

hauled away there will be more gardens.

Private property that is not in use may be taken over by the City and assigned to a gardener. Already the idle lands about factories, the abandoned homes, park lands, etc., are being checked to see if they can be used for vegetable growing. This may seem like wasted effort. It is not, because the thorough-going Nazis put the big or obvious areas to work before the war, hence much of the expansion in gardening today must come through the utilization of small, scattered tracts of ground.

Several German cities are now employing official gardeners whose first duty is to assist gardeners in locating space for their gardens. It is expected that working with the gardeners they will seek out all idle land before turning their attention to the city-owned lands now being used as pastures or for the growing of cereal crops. Unless sufficient idle land can be found, it will undoubtedly be necessary to cancel leases with farmers so that such land may be turned to more productive uses. Certainly, a city is hardly justified in keeping land in pasture that will provide fresh vegetables for several families, but grass enough for only a cow or horse. It is estimated that from 50 to 75 per cent more calories can be obtained from a given area in vegetables than from the production of wheat.

Gardening is not easy today in Germany. Seed supplies, so far, have been sufficient to meet all demands. A few kinds and some of the desired varieties were not available in sufficient quantities, but there were others which could be and were substituted. This might not have been true if all of the gardeners who asked for space had received it. However, seed so far has not been a limiting factor.

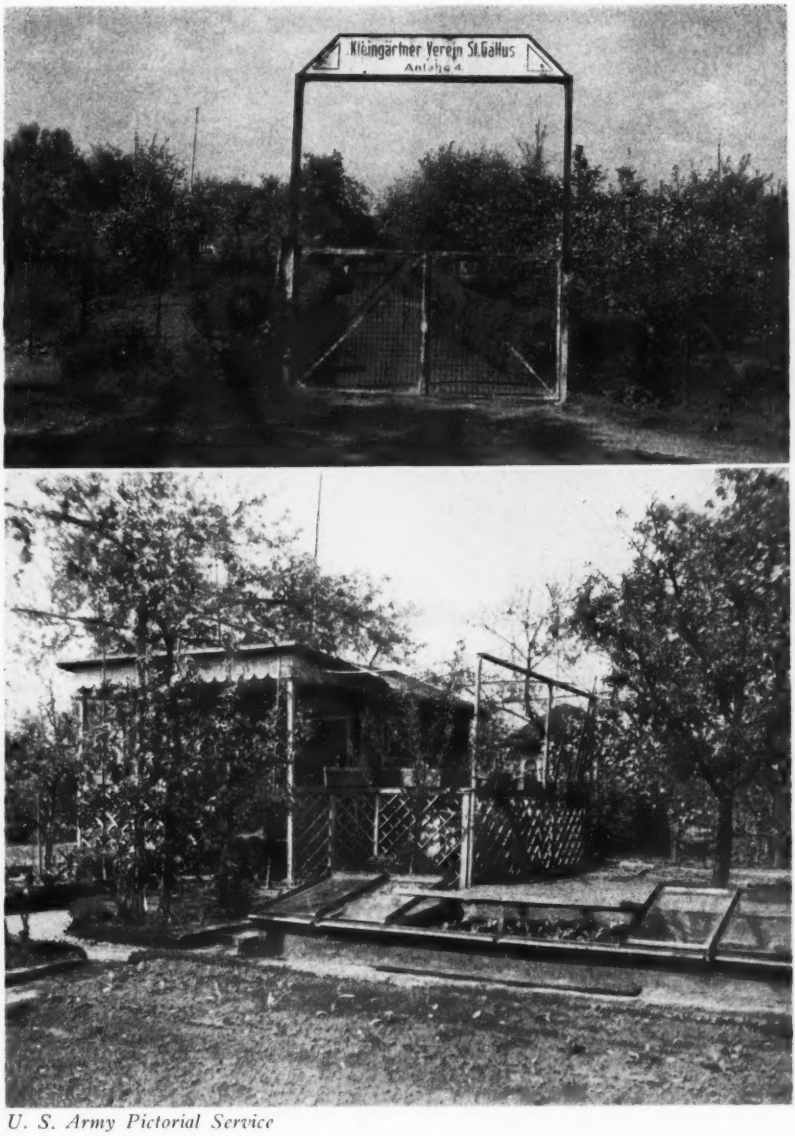
Tools have not been available in appreciable quantities for the new gardeners or for those who lost theirs in air raids. Some have been able to get local blacksmiths to make things for them from scrap steel, but even the handy blacksmith has been limited in his endeavors by the shortage of coal for his forge. Rakes are being made of wood in satisfactory quantities.

Fertilizers for the gardener are not available. The small supplies were allocated to the commercial truck crop growers and to farmers. Germany has ample supplies of potash, but nitrogen and phosphate are exceedingly short. Far below the needs. Gardeners have been meeting this problem by saving everything of fertilizing value. Many gardeners admit carrying stable manure in suitcases from the country. It is not a rare sight to see a woman sweep up freshly dropped horse manure in the street and carry it to her garden.

An enterprising garden leader near Stuttgart discovered that an old city dump contained a large amount of highly valuable fertilizing material. He now has a couple of men sifting out the broken bottles, bedsprings and brickbats. Gardeners are glad to get this material at the nominal price of 7 marks (70c) per cubic meter. It is rich in nitrogen and minerals—a welcome substitute for the nicely packaged fertilizers American gardeners so freely use.

Spray materials are also short, although this is not particularly serious for the vegetable gardener for he can pick off the cabbage worms by hand. If he grows potatoes he can knock the Colorado potato beetle (it migrated to Europe following World War I) into a pail. But, if he wants to protect his fruit trees, he needs Bordeaux and sulphur both of which are scarce and hard to obtain.

Probably the most serious shortage with which German gardeners have to



U. S. Army Pictorial Service

Frankfurt, Germany. A well locked gate and a good high fence protect most of the Kleingarten units. Older gardens such as this are often smothered by fruit trees. Each plot has its tool house, some of which are improved to serve for temporary living quarters. Below. Well organized Small Gardens have shelters, cold frames, compost pit and permanent water supply. Dwarf fruit trees are less harmful to vegetable crops grown beneath them.

U. S. Army Pictorial Service

Frankfurt, Germany. Emergency gardens, "Grabeland," are leased to gardeners for one year, may not have fruit trees, shelters or fences. Plots vary in size from 150 to 300 square meters, are on city owned land, and rent from three to five marks per 100 square meters. To meet the great demand for gardens it is proposed to seize vacant private owned property and lease it to gardeners under similar terms.

contend is fencing. Why? Fences are needed to protect the gardens from two-legged thieves. Fencing is a serious need under present conditions to protect the gardens from hungry people. There is considerable talk that the city government will invoke the curfew law as one way to stop this theft. However, the gardener is not taking chances on slow acting civil governments. He is building fences from whatever material he can lay his hands on. Much of the vast quantities of barbed wire left behind the retreating German armies is painfully being fashioned into fences. Split saplings, scrap lumber, plus pieces of debris from wrecked buildings, are being fashioned into fences. Not very sightly, it is true, but at least a partial protection for a family's food supply.

Rabbits, birds, and in a few places, deer are serious pests of the small gardener. Not being allowed to have guns, the gardener is handicapped in protecting his garden. No doubt, some of the more ingenious will try trapping the rabbits, hares as they are called in Europe. Scarecrows, strips of rag, pieces of tin, even broken mirrors are hung up to scare the birds away. The deer will probably be scared away by

G.I. hunters and so will not be a problem for the gardener who probably needs the meat much more than do the hunters.

The home canner of vegetables and fruits is confronted with just as many shortages as the gardener. Glass jars, rubber jar rings, sealing wax as well as fuel for the processing have so far not been made available. Sugar for the canning of fruit is likewise unobtainable. However, it is believed that the German housewife will kraut, dill, dry and otherwise preserve just as much as possible. In addition generous quantities of the root crops will be stored in pits for next winter's use. Perhaps the variety will be lacking, but the home gardener will have done his best to fill the gap created by an influx of unwanted visitors and a supply problem that the farmers could not meet.

The German gardeners are doing their best to produce food—all of the food that they can for they know that the only sure way to eat is to grow it themselves. They are making a substantial contribution to Germany's food supply — much more than you or I realize.

A Maker of Books on Gardening
Charles de Sercy-Pirate and Pioneer

MARGERY F. WARNER

One of the first of the 17th century floricultural works to occupy me was the "Nouveau traité pour la culture des fleurs," an anonymous book published by Charles de Sercy, Paris, 1674. This was generally credited to Pierre Morin, on the strength of Barbier, "Dictionnaire des ouvrages anonymes" (3:523), which says the author's name is in the privilege. Haller, "Bibliotheca botanica" (1771, 1:574), and some others considered the work strictly anonymous, but many more recent authorities, even so excellent a bibliographer as M. Georges Gibault of the French National Horticultural Society, followed Barbier's attribution, and few persons had occasion to challenge it.

The book was, however, a translation from the "Manuale de' giardinieri" of Fr. Agostino Mandirola, and the fact had not escaped notice. A certain copy of a later French version by Andry (1765) was found with manuscript notes referring to the previous translation of Mandirola in 1674. From the handwriting, these notes appear to have been written in the late 18th century. This may have been my first clew to the origin of the "Nouveau traité," although there were other things to indicate its connection with Mandirola. It is, in fact, a French rendering of the first two parts or "books" of the "Manuale de' giardinieri," giving the description and culture of flowers, herbs and ornamental plants, to which is added under each species the properties of the plant, from Mandirola's fourth "book" on the medicinal uses and virtues of plants. When I examined the "Instruction facile pour connoistre toutes sortes d'orangers et citronniers," also published by De Sercy in 1674 without an author's name, it proved to be translated and somewhat adapted from Mandirola's third "book," entitled, "Della coltura e varieta delle agrumi."

Moreover, when a copy of the "Instruction facile" was found with the royal privilege under which Charles de Sercy issued both works, it did not state that the "Nouveau traité" was by Morin; but a number of titles were blanketed together in the same permission, all without names of authors save the last, which was the "Remarques pour la culture des fleurs, par le Sr Morin." There are a half dozen or more different books printed by De Sercy under this same privilege, which was granted 12. May 1673, registered 14. May 1673, and printing completed, in case of the "Instruction facile pour connoistre toutes sortes d'orangers et citronniers," 12. Avril 1674. This inclusive privilege evidently baffled some readers.

Charles de Sercy was then becoming definitely a producer of gardening books. I do not know when he began printing books, or what he issued besides those on horticultural topics. The first I have found with his imprint is the "Théatre des plans et jardinages" (Paris, 1652), of Claude Mollet. This was not a new work, as it is supposed to have been written between 1610 and 1615, and its author had been dead some years, but it has 22 fine plates signed by his three sons, André,

Jacques, and Noël Mollet, and it is something of a collector's item. This was a good beginning for a horticultural publisher, but some years passed before De Sercy's next venture, the "Remarques necessaires pour la culture des fleurs" (Paris, 1658), of Pierre Morin, which was also important, because it was the first general floricultural work in French. It was followed by the "Instructions pour connoître les bons fruits" (1660) of Claude Saint-Etienne; the "Jardinier royal" (1661) of Guillaume Cardinal; and the "Abrégé des bons fruits" (1667) of Jean Merlet, all works of considerable merit.

Meanwhile, other printers of Paris and the provinces were issuing horticultural books, notably 8 or 10 editions of "La manière de cultiver les arbres fruitiers" of Le Gendre, and twice as many of the "Jardinier françois" of Nicolas de Bonnefons. To complete with these De Sercy reissued earlier books, including two "inferior" editions of Mollet, and sought new works to publish, as well as ways to increase the sale of old ones. Among the latter was addition of extraneous material, which was not always well chosen. Perhaps his first venture of this kind was the edition of Morin's "Remarques necessaires pour la culture des fleurs" in 1667. In which he inserted most of the "Jardinage des œillets" (Paris, Louis Boulanger, 1647). This book was probably even then scarce, and its author was unknown; so it was readily accepted as the work of Pierre Morin, although the latter must have been dead some years. The result was that Morin is more often cited by botanists and gardeners for his (?) "Traité des œillets" than for his own work, although the "Remarques" must have been widely used, as it was reprinted down to 1704, with at least 14 editions.

There must have been a good sale for the "Noveau traité pour la culture des fleurs" and "Instruction facile pour connoistre toutes sortes d'orangers et citronniers", as De Sercy printed 5 editions of the first and 3 of the latter. This was a literary hodgepodge, as he added to the work on citrus two irrelevant items: "Traité de la taille des arbres", and "Secret admirable pour faire venir toutes sortes de plantes, arbres fruits, fleurs, & legumes d'une prodigieuse grosseur", in which the receipt is scarcely longer than the title. The British Museum, commenting on the attribution of the "Instruction facile" to Pierre Morin, concluded that only these two appendixes were actually by him; the fact is that both were either pure compilations by Charles de Sercy or some "editor" employed by him; or possibly bits of antiquated lore found in manuscript or some old book, and used as padding for this volume.

In the following year appeared, also under the privilege of May 12, 1673, the "Abrégé pour les arbres nains et autres" (Paris, 1675), by "I. L. Notaire de Laon". The notary, Jean Laurent, was a real person, and his own work was valuable, but the other contents, on floriculture and melons, are apparently by another hand, and probably originated in De Sercy's printing shop. I do not know whether he adulterated any reissues of his earlier books during this period, but he shortly produced one of his worst frauds, a "Traité des tulipes" (Paris, 1678), which is an inaccurate and jumbled edition of the "Floriste françois" (Caen, E. Mangeant, 1654), by Charles de la Chesnée Monstereul. About the same time, he got out two issues of a "Traitté des orangers, citronniers, grenadiers et oliviers" (1676, 1678), which I do not know, but have reason to suspect it is a rehash of earlier works.

A decade passed without striking experiments. In 1688 De Sercy reprinted the "Traité de la jardinage" of Boyceau de la Baraudière or Barauderie, which was first published in 1638 (Paris, Michel Vanlochom), as a folio with 63 fine plates. It had been reissued (Paris, A. Courbé, 1640), but there may have been room for a new edition, and De Sercy's folio (Paris, 1688) gave the original text unchanged, although it used only 43 of the 69 plates. Apparently trading on the fame of this book, he published in the same year, also under the name of Boyceau, a "Traité du jardinage" (Paris, 1688), which is often confused with but is an entirely different work from the folios of 1638 and 1688. It is in "pocket" size, has no plates, and its miscellaneous contents are of slight value. Jacques Boyceau de la Barauderie died before completing his great work, and while it might have been possible for manuscript notes of his to be printed more than 50 years leater, De Sercy's reputation makes this extremely doubtful. This popular treatise can only be regarded as one of his most "impudent forgeries".

The late C. Harman Payne, who gave me many data on De Sercy's and other floricultural publications, several of which are here used without special acknowledgment, used to say that Charles de Sercy was a good deal of a "pirate". The running down of publishers' frauds was one of Mr. Payne's major sports, and many are the errors he has discovered in this as in more important areas of floricultural history. He owned many De Sercy imprints, and investigated honest as well as fraudulent ones. But, while I do not condone the publisher's methods, which were particularly flagrant in the case of Jean Laurent, the spurious work in the name of Boyceau de la Baraudière, and the garbled reprint of the "Floriste françois": neither can I utterly condemn anyone who gave to the world so much horticultural literature that might otherwise have been unknown. I believe De Sercy got his start in publishing the work of Pierre Morin, whom he may have exploited to an extent it is impossible to discuss here; but I doubt if the translations from Mandirola were deliberate frauds, although the publisher must have been delighted to have them win favor through association with Morin. It should be remembered, too, that reprinting works published by others was not necessarily unlawful. Privileges granting exclusive rights for the printing and sale of a book were granted for limited periods, and when they expired, others might obtain permission to print the book unless the former publisher was prompt about his renewal. It gives me a bit of naughty satisfaction to know that De Sercy himself experienced this in case of Morin's "Remarques necessaire pour la culture des fleurs", several editions of which were brought out by other printers while he had no privilege covering the book.

I find about 60 of De Sercy's imprints in gardening literature, and there must have been others. There are 28 titles, comprising a dozen original works, the rest being mostly fairly decent reprints, with a few outrageous piracies. This total may seem small, but it includes by far the greatest proportion of the horticultural books published in France during that half century. On the other hand, his output may seem larger than it really was, because editions were small, and as labor was relatively cheaper than paper and ink, books were often reset to keep them in stock. While much of his activity was due to business enterprise, I believe Charles de Sercy had an idea of

making his "garden library" as complete as possible. His press naturally became an outlet for the literature of the subject, and he published some good works. He kept most of his earlier books in print, and added editions of several published by other printers. In 1676 he got out copies of both Le Gendre, "La manière de cultiver les arbres fruitiers", and Vautier, "Instructions pour les arbres fruitiers"; in 1679, the "Jardinier françois" of Bonnefons; and in 1696, the "Nouceau traité de la taille des arbres fruitiers" of Dahuron; and the anonymous "Connoissance et culture parfaite des belles fleurs", which was reprinted with a slightly changed title but identical text, from the original work (Paris, Laurent d'Houry, 1688). And it is my guess that the very inferior "Traité des tulipes" (1678) owned its existence less to De Sercy's wish to emulate La Chesnée's "Floriste françois", than to his notion of a companion-piece to the "Nouveau traité des œillets" (1676).

The first five books published by De Sercy, between 1652 and 1667, all had some weight; but in the 30 odd years of his subsequent career he produced comparatively few new works of great importance. "I'art de tailler les arbres fruitiers" (Paris, 1683), by Nicolas Venette, was one; and I suppose the "Nouveau traité de la culture des jardins potagers" (Paris, 1692), attributed to Garnier, "Jardinier du Roi à la pepinière", was another good treatise. An outstanding publication of this middle period was the "Nouveau traité des œillets" (Paris, 1676), by "L. C. B. M." This was the principal compendium on the carnation of an age that specialized in the development and exploitation of that flower, and it contains most of the contemporary knowledge of its culture and habits, together with a comprehensive list and description of the known varieties, their history and origin, and many notes on breeders and amateurs of the flower. I do not know whether it suffered any "editing" from the publisher, but he reissued it verbatim in 1698, and it was never published by anyone else, although it was widely quoted and translated, forming the core of the carnation portion of many other books. It is a pretty safe guess that a chapter on "nelken" or "garofani" or "œillets" in a late 17th or early 18th century floricultural book is extracted from or based upon the "Nouveau traité des œillets" of 1676. Its merit is attested by a writer named Goube, of Valenciennes, who nearly a hundred years later wrote a book of the same title (Cambray, S. Berthoud, 1769), which has sometimes been confused with the earlier publication. M. Goube values the work of "L. C. B. M." very highly, and often quotes it as an authority, scrupulously citing title and page.

It was an age of compact gardening manuals. The work of Olivier de Serres at the beginning of the century, although many times reprinted, was falling into disuse, and that of La Quintinie did not come till 1690. The little volumes of Merlet and Bonnefons and the rest were exceedingly convenient, and De Sercy capitalized this fact. While I would not choose one of his copies of certain works in preference to those by other printers, it is a fact that he handled pretty nearly everything the gardener might ask for. By hook or by crook, he managed to print nearly all the important French works on gardening in the second half of the 17th century. He has had many successors, but by all rights Charles de Sercy was the pioneer horticultural publisher.

This is to be remembered, however. Many of the gardening books printed

by De Sercy, even those admittedly genuine, were issued without the author's name or under cryptic initials, and a good many after the author's death. Some have been credited to more than one person, and one or two of the attributions are more than doubtful. There were also many editions of some books, with considerable variation among them. Whatever we owe to De Sercy's enterprise, we should not overlook the fact that, in view of his known frauds, there is an element of uncertainty about his publications. We cannot, therefore, assess them solely on the basis of authorship, but must take them a good deal on their face value. Insofar as some of them have real merit, it is easily recognized, and in many cases has won approval through many years of use. This merit is probably due to the original manuscript, but in view of the "editing" that De Sercy was wont to supply, we cannot in fairness take the supposed authors too severely to task for defects or errors in books that in many or most cases were published without their knowledge.

I do not know how Charles de Sercy ranks as a typographer, and have no access to works on French printing. To my knowledge he printed mostly handy volumes, and no fine ones with possible exception of the landscape gardening books of Mollet and Boyceau de la Barauderie, which I have not seen. He certainly did not issue any of the sumptuous illustrated flower books of his time and country. My memory turns to rows of small volumes bound in serviceable calf, now darkened by age, which seem to have been made for the use of gardeners. The type was usually small, and there were no elegant formats, though the page was sometimes attractive, and the typography was usually fairly accurate. The printer's mark used by Charles de Sercy during most of his career consists, ironically, of two hands clasped over the initials "C. D. S.", surmounted by a crown, illustrating his motto, "Lo bonne Foy couronné".

Hendersonville, N. C.

Dahlias During the War Years

Morgan I. Riley

War has changed everything about and to do with dahlias—except soil and weather, the dahlias themselves and the desire to grow them. The Dahlia Society of Wisconsin summed war's restriction: "Everything else must be subordinated to an all out effort to win this perilous life and death struggle." In 1944 an Austinburg, Ohio, grower wrote: "We have a large farm, one of us is draft age, and anyway food production has to come first." Next year he wrote: "Our son is in Italy. We are out of the dahlia business."

Does war permit new dahlias and trial ground judging and shows and introducing new dahlias? In the two peace seasons 1937 and 1939 (1938 was the New England hurricane) dahlia enthusiasts submitted to Storrs, Connecticut, 155 and 206 seedlings; in the two war seasons 1943 and 1944, 60 and 89; to East Lansing, Michigan, in the same years 150 and 92, then 57 and 92. Thus in the two years of peace dahlia fans entered two seedlings to trial for every one in the two war years.

In 1937 and 1938 growers offered

through the Bulletin, 109 and 88 and in 1943 and in 1944, 37 and 45 new dahlias. Introductions underwent the same drop, the same latest season recovery, and the same two-to-one ratio as trial ground seedlings.

In 1944 at the Maryland trial grounds "due to the severe labor shortage in this area, the Committee has decided not to operate the Trial Gardens at College Park for the duration"; in Cincinnati "some of the members are engaged in war work and had difficulty in finding time to view the Trials"; and in Michigan "many had difficulty getting to East Lansing, as travel conditions were very poor." Four out of four official Trail Grounds in war tested and judged new dahlias; the war closed four out of four unofficial grounds.

"In keeping with the request that county fairs and kindred meets in this section be omitted this season, the West Virginia Dahlia Society announces that its 1942 Dahlia Show will not be held." In May, 1943, out of an Ohio dahlia society comes: "It is with regret that we inform our friends and Dahlia fans that the Ohio State Show will not be held in Wellsville next September. Owing to the shortage of tires, men and women working shifts and other things unforeseen, it will have to be cancelled." But, the South Central Wisconsin Dahlia Society sought and got support: "In a recent poll of the Society members relative to staging a show this fall, the result was 100 per cent for a show." Of 42 shows reported in 1937 and 17 in 1938, 1943 and 1944 did not report or reported none. Of the shows of peace, war closed over four out of ten.

Looking forward in war's springtimes what have been the prospects for usual-sized shows? In Janesville, Wisconsin "the major part of our land is in Victory Gardens," and in 1943 Vineland, New Jersey, advertises: "We will grow over 20 acres of soy beans."

Commercial dahlia growers found war allowed them to get gas if they grew vegetables, could get none if they grew flowers only. They grew vegetables—and dahlias.

In announcing its 1943 show the American Dahlia Society throws out the hint: "Fertilizers will be permitted for vegetable gardens—some of the valuable plant nutrients will reach your Dahlias," then trumpets: "Border your Victory Garden with Miniatures and Poms. Grow Giant Dahlias between the rows of pole beans, corn and tomatoes." So this happens in New York: "Although as of yore he exhibited fine Dahlias, it was observed that he hovered with particular pride, like that of a setting hen, over his prize-winning egg-plants, garnished with blue ribbon parsley and string beans."

"With both nitrogen and potash allocated to the manufacturers of war materials, we were going to have to depend on manure and cover crops." Rototox advertises in the May, 1942, Bulletin: "No more Rototox is available." Tools, rubber hose — the old ones had to do.

When the exhibitors looked to see what classes they might show they found the schedule of the North Eastern Pennsylvania Dahlia Society for example "streamlined to meet the exigencies of a war-time show," and people far from New York City took note that "Air Shipment Class is omitted due to restrictions on Air Express."

Short of gas, the Ohio Valley Dahlia Association chose "a central, downtown locaton, thus facilitating the problem of transportation.'" The Dahlia Society of Michigan solved the problem differently: "For the amateurs, who may be saving tires, we have arranged to pick up any flowers which can be brought to a central loading point." New York

City grinned: "If the gasoline shortage continues through the Fall, many exhibitors will be obliged to bring blooms to New York on the trains," and bore it: "E. O'Keefe, with the help of his family, carried large flower boxes on the long train ride" to New York.

At Rochester "with so many who are interested, working long hours during these war days, the Society decided again to choose a Sunday." And at Cleveland war's exigence overbore any one flower's habits: "The show date was the earliest in years, owing to the fact our society wanted to cooperate with the garden clubs and Victory Gardens Harvest Festival, the first week in September."

War jolted the Virginia Dahlia Society: "Uncle Sam was taking over the ground which had been the scene of the annual fair for many years." In Bremerton, Washington, the show "was held at U.S.O. headquarters."

Members and friends of the North Eastern Pennsylvania Dahlia Society were "admitted only by the purchase of any denomination of Defense Stamp or War Bond"; and the State of Delaware Dahlia Society reports "quite a large amount raised for Army and Navy relief."

North Eastern Pennsylvania Dahlia Society observed how: "Due to gas restrictions our own membership was unable to transport as much stock as in former years." The Portland (Oregon) Dahlia Society lamented: "For many years this annual show has been noted for its magnificent floor and wall displays by commercial growers. Due to lack of help and transportation difficulties and loss of many of our growers this feature of the show was missing."

At the Washington State Dahlia Society show: "While the number of entries was far below other years, the blooms shown were excellent and the show was well attended." War certainly did pull in one show's belt; the Peekskill Dahlia and Gladiolus Society held their show among "kitchen cabinets and dining room furniture in the home of Mr. and Mrs. F. C. Kunzhals. The judges were hard put to make decisions, as the flowers were of exceptional quality."

The American Home Achievement Medal is each season's most earnestly contested award. Thirty-four were awarded in the two years 1937-38, 23 in the two years 1943-44 — three in peace to two in war.

At the Mid-West Conference show "Due to war restrictions several of the awards which previously consisted of silver cups, etc., were replaced by items made of non-critical materials such as beautiful vases, etc." The National Capital Dahlia Society reports: "Our awards committee awarded $113 in War Stamps, fertilizer, grass seed, and two trophies."

In 1944 the Ohio Valley Dahlia Association reports "this the best show of the past four years. There were more entrants interested, more flowers shown, and a much greater attendance than usual." Others did not so well, as the Baltimore Dahlia Society: "While the show was not staged on the large scale as has been our custom we did live up to our reputation for showing the best in dahlias."

War has done these things to the new dahlias. Has the dahlia fan been able to buy the older dahlias, the standbys? Clarksburg, Indiana, pictures the growers' difficulties: "Our two sons have been in the armed service for two years, and other young men who helped us have also done likewise. War has certainly retarded our Dahlia growing." The Portland (Oregon) Dahlia Society "has planned to take care of the lifting and storing of the bulbs for members in the service."

Eleven growers tell me they grew 123,700 hills in 1937 and 1938, 97,970 in 1943 and 1944. Those who raised vegetables were six out of the twelve in 1937; they became eleven out of the twelve in 1943.

Then, if they had raised dahlias—most continued—when they came to getting out a catalog war took much or all of their paper. Little Silver, New Jersey, met the situation: "Owing to the acute shortage of paper, we are reducing the size of our 1944 List to the lowest point possible." Some mimeographed where before they had printed; some superprinted the current season's date on last season's catalog; some put out no catalog, like Janesville, Wisconsin: "We are at War — there is more important use for paper than in a Dahlia Catalog. You get no catalog this year."

But for all his difficulties, hurdles, restrictions, the dahlia growers' response to war was like yours, like mine —as in Olympia, Washington's: "Defense stamps accepted up to $3.00"; by Geneva, Ohio's: "We have pledged ourself to give free Defense Stamps with all purchases made after Feb. 1, 1943," who later writes: "I am not selling any dahlias for the duration. I am working with an aircraft plant"; and by Baldwin, Long Island's: "Giving 10% of the purchase price in Defense Stamps."

The war has settled even dahlias' names. In 1940 it was Kentucky Sweetheart and Yellow Glory, Autumn Rose and Eventide, actually Progress. But 1943 saw The Blitzkrieg and Pearl Harbor; saw Wake Island and Kiska, Commando and The Ranger, WAAC and Waves and Wings, Stalin and Winston Churchill, General Wavell and Lidice. In 1945 it's D-Day, Moscow, Flying Fortress, Radar, V-Day and curiously, General John J. Pershing.

The war kept members from meetings. The Ohio Valley Dahlia Association describes in 1943 how "Many Dahlia fans are too busy with war effort to get out to every Dahlia club meeting." From the Mid-West Dahlia Conference comes: "Mr. Swartz thought it advisable to postpone the meeting." The Portland (Oregon) Dahlia Society informs its members: "The August meeting will be combined with the annual picnic as gas shortage prevents making a trip to outside points"; the Puget Sound Dahlia Society judges: "a meeting every month impossible so now we intend to have a meeting about every three months"; and one correspondent writes: "The Englewood Dahlia Society has been disbanded for the duration. The Treasurer is deceased, the secretary is somewhere over seas."

Now we can estimate how much war reduced dahlia activities. 1943 and 1944 compares with 1937 and 1938 in percentage as follows:

	Per cent
Number of hills	79
Pages of Bulletin	68
Achievement Medals	68
Shows	60
Number of Societies	58
Introductions	52
Number of Trial Grounds	50
Trial Ground seedlings	49
Advertisers in Bulletin	38

The top figure is too high. None of those commercial growers replying to my questionnaire grew no dahlias in 1943 and 1944; some in these war years we know grew none. The average of the above per cents is 58. So taking reckoning of those that grew none we are probably not far wrong when we say war constricted dahlia activity to half.

War has allowed dahlias to scrape through with the best scrape they

could. But, in all parts of these United States the hearts of these dahlia people—people of the people—spoke in wartime; I have woven their saying together:

"One cannot merely eat, sleep, and work long hours in defense work. In the limited time allotted to us recreation is essential to physical and mental health if we are to contribute our best to the war effort. I sit in the garden scanning our streamlined dahlia patch reflecting that few hours are more restful and peaceful than those spent in one's garden. In these days of suffering and strife, things of beauty restore hope and confidence and faith in humanity; we who have gardens can do much to bring good cheer and hope to the hearts of our troubled neighbors and friends by sharing with them the beauty of our gardens. Flowers are more needed in these troubled times than ever before."

Bamboos in American Horticulture (V)

ROBERT A. YOUNG[1]

In this concluding contribution in the series[2] on bamboos in American horticulture, 9 species in 5 additional genera of the tropical clump-forming type of bamboos are considered. It has seemed convenient here to take up the genera and species in alphabetical order.

The Genus Cephalostachyum

Since bamboos, like other flowering plants, are classified on the basis of characters in the inflorescence, and there appear to be no important corresponding vegetative characters in the genus Cephalostachyum, no discussion of generic characters will be attempted here. Only one named species of the genus is being considered at this time.

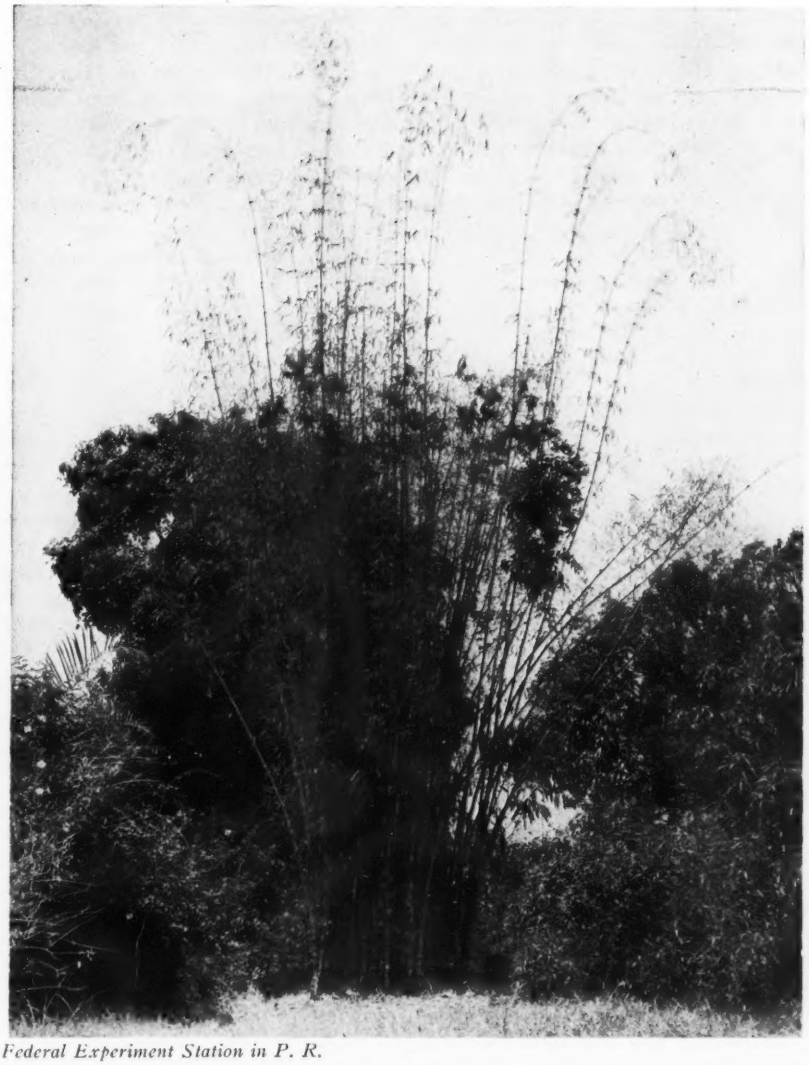
Cephalostachyum pergracile Munro. This species is erect growing, as shown in the photograph of a 34-foot-tall clump at the Federal Experiment Station, Mayaguez, Puerto Rico, shown on page 353. A clump at the Canal Zone Experiment Gardens, at Summit, is at present about 30 feet high and understood to be increasing. In India, where it is native, *C. pergracile* is reported to make beautiful clumps of 40 feet or more in height with culm internodes as much as 18 inches in length and with diameters of 3 inches near the base of culms. The branches are exceedingly slender but bear relatively large fascicles of twigs with leaves. The leaves are fairly large—up to 10 inches long and from ¾ to 1¼ inches wide. Information is lacking as to the adaptability of the culms for particular uses.

The Genus Dendrocalamus

The genus Dendrocalamus is very close to Bambusa and appears to be scarcely separable except on fruit characters. The branching habits in the two genera are not essentially different, nor are the culm sheaths or leaves found to differ in general in any definable or characteristic way. The species that have been introduced into the

[1]U. S. Department of Agriculture, Agricultural Research Administration, Bureau of Plant Industry, Soils, and Agricultural Engineering, Division of Plant Exploration and Introduction.

[2]Natl. Hort. Mag. 24:171-196, July 1945; 24:274-291, Oct. 1945; 25:40-64, Jan. 1946; 25:257-283, July 1946.



Federal Experiment Station in P. R.

A clump of Cephalostachyum pergracile with culms 34 feet tall, at the Federal Experiment Station in Puerto Rico at Mayaguez.

United States thus far grow to giant size in their native habitats. The species are *D. asper* (Schultes) Backer, *D. membranaceus* Munro, and *D. strictus* Nees. *D. strictus* has long been in the country and has been offered by a few nurserymen. This and the other two species mentioned will be discussed briefly below in the order named. *D. giganteus* probably also is growing at

the U. S. Plant Introduction Garden, Coconut Grove, Fla.; in the Canal Zone; at Mayaguez, Puerto Rico; and on the island of Oahu, Hawaiian Islands, but it has not as yet been possible to check with certainty the identity of the plants believed to be of that species. The semi-hardy bamboo long known in southern California and southern Florida as *D. latiflorus* was reidentified as *Sinocalamus oldhami* (Munro) McClure (*Bambusa oldhami* Munro) several years ago by Dr. F. A. McClure. The bamboo originally described as *D. latiflorus* (now *Sinocalamus latiflorus*) is a distinctly different species and has not yet been successfully introduced into this country.

Dendrocalamus asper (Schultes) Backer is a giant bamboo originally described from Java as *Bambusa aspera*, later transferred to the genus Gigantochloa, and finally to Dendrocalamus. There has been some uncertainty as to the validity of publication of the combination *D. asper* but it appears to have better basis than any available alternative name. A view of two splendid clumps nearly 60 feet high at the Federal Experiment Station, Mayaguez, Puerto Rico, is shown on page 355. It will be noted that though many of the culms are inclined outward, yet they remain remarkably straight. The species is reported to grow to heights of about 100 feet in Java, with culm diameters up to 8 inches; the culm walls are not very thick, scarcely ¾ inch in the largest culms. The lower culm sheaths are very short for their width, narrowing abruptly to a narrow apex, with a long, or high, fimbriate ligule; they are stiffly coriaceous and densely covered on the outside with appressed stiff brown hairs; they usually dry to dark or pale brown. The blade is small, lanceolate, reflexed, and rolled inward on the edges; auricles are rudimentary or lacking. The leaves are quite variable, sometimes very large. Lengths of 5-18 inches and widths of ¾-3 inches are reported in Java; and from Algiers, lengths of 8-10 inches and widths of 1½-2 inches. This bamboo was redescribed under the name *Bambusa macroculmis* by A. Rivière, from Algiers, in 1879, and a maximum height of over 80 feet (25 meters) was recorded there. The identity of *B. macroculmis* with *D. asper* was recognized several years ago by Dr. F. A. McClure, when he compared a plant of *B. macroculmis* sent to the U. S. Department of Agriculture by Dr. Réné Maire of the University of Algiers, with authentic material of *D. asper* obtained from the Surinam Department of Agriculture.

Some clumps of *Dendrocalamus asper* at the Plant Introduction Garden, Coconut Grove, Florida, were making excellent progress and had reached heights approaching sixty feet when the hurricane of late October, 1945, struck that locality. They were submerged sufficiently long by salt water to be almost completely destroyed. A few shoots have recently appeared, however, and it is hoped that one or more of the clumps will be regenerated. The species has been established also at the Canal Zone Experiment Gardens, Summit, but has not attained great height as yet. As to cold resistance, it was reported to have endured many degrees of frost at Algiers, but its hardiness has not been put to a real test in this country.

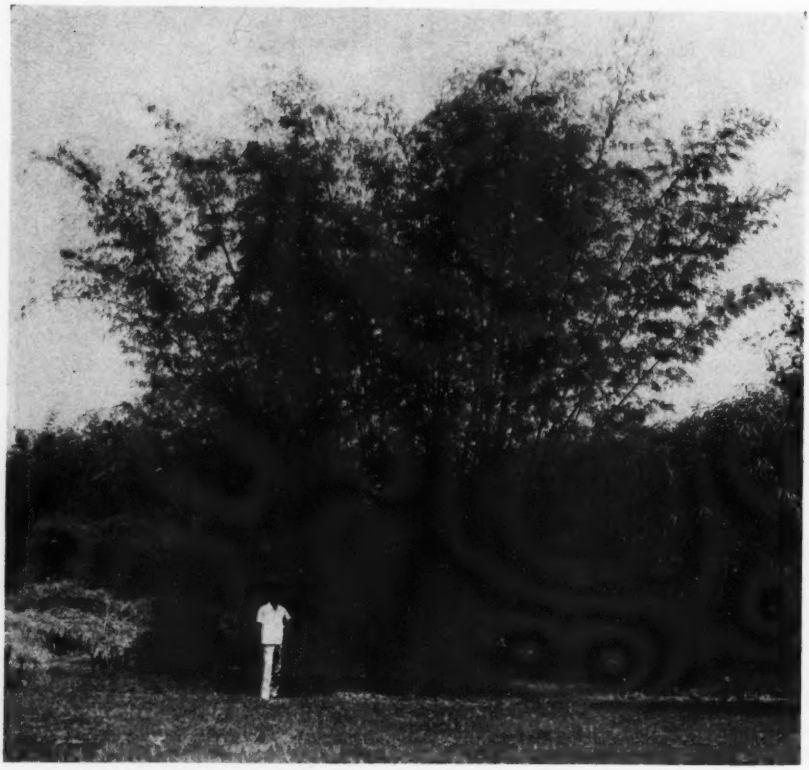
I have found no reference in the literature to special uses of the culms of *D. asper* but presumably they are adapted for at least some of the purposes for which the culms of other giant bamboos are used. The very young shoots, dug before they emerge from the ground, are reported to be eaten in Java (Ochse, J. J. Vegetables of the Dutch East Indies (English ed.),

Federal Experiment Station in P. R.

View of two clumps of Dendrocalamus asper, about 60 feet high, at the Federal Experiment Station, Mayaguez, Puerto Rico. It will be noted that the culms in general are very straight.

p. 310, 1931). Another scientific synonym of *D. asper* is *D. flagellifer*. The Malay name is "bamboo betoong."

Dendrocalamus membranaceus Munro, native in Burma and eastern India, is a giant bamboo reported to attain heights of about 75 feet, with slender culms—the diameters up to only about 4 inches. A very open clump is formed, as is evident in the view of a clump at the Federal Experiment Station in Puerto Rico, shown on page 356. The culm sheaths have the general form and appearance of those of *D. strictus* except that the blade is distinctly narrower than the apex of the sheath proper and the ligule (at apex of sheath, inside of blade) is much more prominent and frequently is conspicuously margined with cilia, or bristles. The leaves are generally small but are quite variable among the different forms grown from seed obtained from Dehra Dun, India; originally described as only 4-5 inches long and ⅓-½ inch wide, they were later reported sometimes to reach 10 inches in length and ¾ inch in width. Among clumps from four different seedling origins grown at the Subtropical Experiment Station, Homestead, Fla., some years ago, the maximum length of leaf ranged from 4 to 6 inches and the maximum width from ⅜ to ½ inch. At Matheson Hammock, in the Dade County Parks, in southern Florida, *D. membraneceus*



Federal Experiment Station in P. R.

View of a clump of Dendrocalamus membranaceus, showing the open habit of growth, at the Federal Experiment Station in Puerto Rico.

has reached 35 feet in height, while at Mayaguez, Puerto Rico, culms have grown to 43 feet, with a diameter of 2½ inches. It is now established also in the Canal Zone.

Dendrocalamus strictus Nees is one of the best known and most valuable of the giant Indian bamboos. A clump photographed on the Henry Nehrling place at Gotha, Fla., in 1909, is shown on page 357. The species is said to reach heights up to 100 feet or more in the Old World Tropics, though 60 feet is the tallest I have seen reported as yet in the Western Hemisphere. The culms are not of very large diameter for their height but they are exceedingly thick walled, and in some of the numerous forms they are nearly or quite solid; the wood is very dense. The culm sheaths are more or less densely brown or blackish hairy, or bristly, gradually or abruptly narrowing toward the apex, usually pliable but occasionally somewhat rigid, and with a narrow, inseparable blade of the same width at its base as the apex of the sheath. The primary branch at each node of the culm frequently is much larger than any of the 3 to 6 smaller

P. H. Dorsett

A clump of Dendrocalamus strictus photographed at the home of the late Henry Nehrling, Gotha, Fla., in 1909.

ones, and the number of leaves on a branch or twig is, as usual, quite variable—from 5 to 7, 6 to 10, or 7 to 13. In size of adult leaves there is also great variation, though the average is rather small; the smaller ranges on a

twig are about 2-5 inches long and ⅜-¾ inch wide and the largest, 3-10 inches long and ⅝-1¼ inches wide.

D. strictus has about the same cold resistance as *Bambusa tulda,* being seriously injured, if not killed, at temperatures below 27° Fahr. In Florida it is better adapted in general, therefore, to the more nearly frost-free areas of the lower Peninsula. It is understood to be much the most common, and probably the best, of at least three different species of bamboo imported in pre-war years into the United States from India under the trade name "Calcutta" cane, or bamboo, used largely for surf and deep-sea fishing. The imported poles usually are characterized by brownish to black discolorations, resulting from the practice in India of heating the frequently zigzag or crooked culms over a charcoal fire, as a necessary preliminary to straightening. It is, of course, only the comparatively small culms, obtained from young clumps or those so managed that they do not produce many larger culms, that are of suitable size for fishing poles. A system of culture that will yield the desired sizes must therefore be followed. Studies of methods of culture, presumably with this as a consideration, were carried on at the Forest Research Institute, Dehra Dun, U. P., India, a number of years ago, and the results detailed in an extensive bulletin (Deogun, P. N. Silviculture and Management of *Dendrocalamus strictus.* Indian Forest Records, vol. 11, no. 4. 173 p. 1937—now out of print). Before the merits of Tonkin bamboo (*Arundinaria amabilis*), from southern China, had become well known and a supply became available, "Calcutta cane" held first place in the esteem of rod makers as a material for split-bamboo fishing rods.

The Genus Gigantochloa

The genus Gigantochloa comprises 25 or more species of bamboo of various sizes, native in southeastern Asia, the East Indies and the Philippine Islands. Only two have been introduced into the United States or its tropical American possessions and established, in so far as I know.

Gigantochloa apus (Roem. & Schult.) Kurz ex Munro, the "bamboo apoos," or "bamboo tali," of the Dutch East Indies, is considered one of the most useful of the bamboos in Java for building purposes and is widely cultivated there. It grows to heights of 35 to 65 feet, according to J. J. Ochse (previously mentioned). The culm sheath and its blade are at first more or less covered with appressed brown hairs, those on the blade being very caducous, and the inside of the blade is prickly-hairy, especially in the center and near the base. The sheaths are without auricles and as a whole are quite variable in details of form, the shoulders being rounded or obtuse and the blades triangular to triangular-ovate, rarely constricted at the base; the base of the blade, about one-third the width of the apex of the sheath, is continued laterally as a very narrow strip (dark brown and conspicuous when dry) to the edges of the sheath apex; the sheath proper is rather stiff and dries to a dull straw color; the apex is quite broad and more or less strongly arched toward the middle; the ligule is short and finely notched. The leaves, dark green above and lighter beneath, are very large, 4 to 18 inches long by ½ to 3 inches in width, and are unequal-sided at the base. Ochse states that the tali bamboo is planted from the plains up to high in the mountains, also that it requires a fertile clayey soil, with abundant moisture. The shoots are said to be virtually inedible.

D. G. White, Federal Experiment Station in P. R.

A young clump of Gigantochloa apus, 4years from the planting of a stump, at the Federal Experiment Station in Puerto Rico.

Small plants of the tali bamboo were obtained from the Surinam Department of Agriculture by the U. S. Department of Agriculture through Dr. David Fairchild and the late P. H. Dorsett, with the Allison V. Armour Expedition of 1931-32. The original record concerning these plants (under P. I.

No. 99573) gave the scientific name as *Gigantochloa verticillata,* and the discrepancy has only recently been noticed. The plants appear to agree well in character with the published description of *G. apus* and are distinctly different from an earlier introduction of *G. verticillata* (under P. I. No. 79568), from Sumatra. *G. apus* is now established at the Federal Experiment Station in Puerto Rico, at Mayaguez, and at the U. S. Plant Introduction Garden, Coconut Grove, Fla. At Mayaguez it has attained a height of 53 feet, with culm diameters up to 3 inches at breast height. A photograph of a young clump at that place, four years from the planting of a large stump, is shown on page 359.

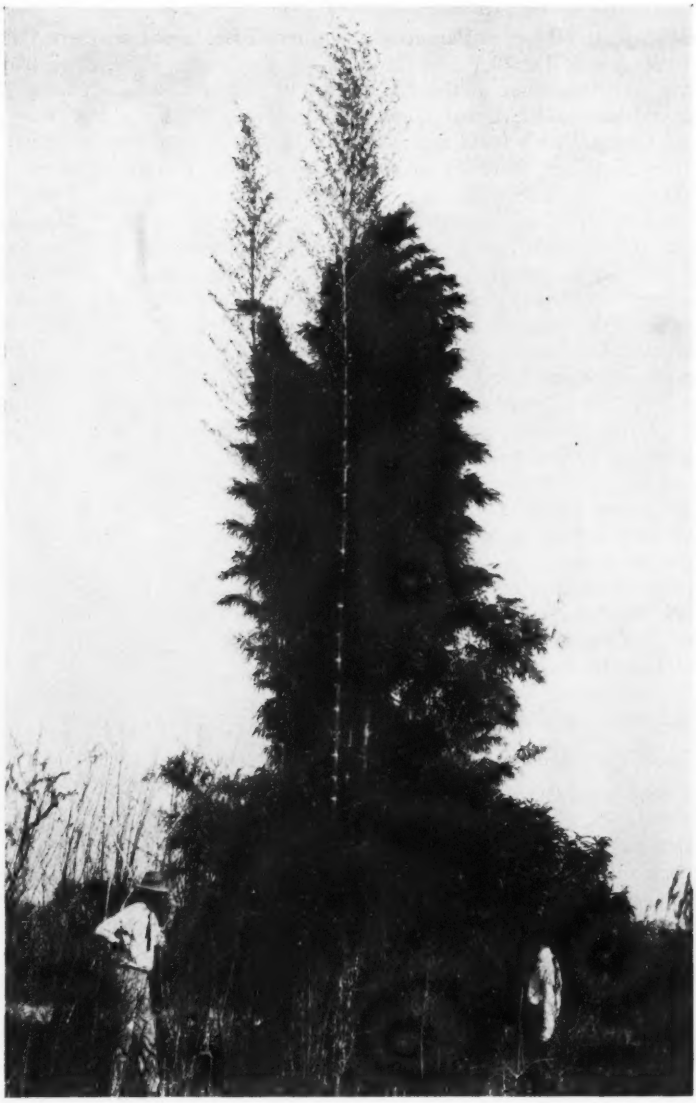
Gigantochloa verticillata (Willd.) Munro, a tall slender-culmed bamboo of the East Indies, is reported to grow to heights of 80 feet or more, with culm diameters not much exceeding 4 inches. The lower culm sheaths are strongly triangular, coriaceous, covered at first with short appressed, more or less caducous, stiff brown hairs, and drying to a straw color; the ligule is short and slightly obtuse; at the narrow apex of the sheath is a pair of small, projecting, rounded auricles and a short, lanceolate to linear-lanceolate blade, slightly cordate at the base and ⅓-½ the width of the sheath apex. The leaves are rather large, 8-12 inches long and ⅝-1⅝ inches wide. The species was introduced from the Sibolangit Botanic Garden, in Sumatra, by the U. S. Department of Agriculture, through Dr. David Fairchild and P. H. Dorsett, with the Allison V. Armour Expedition of 1925-26. It is established (under P. I. No. 79568) at the Coconut Grove Plant Introduction Garden, where it has exceeded 45 feet in height, and also at the Canal Zone Experiment Gardens. The Malay name is "bamboo andong."

The Genus Guadua

Guadua is almost exclusively a tropical American genus, somewhat closely allied to Bambusa. It is a rather large and diverse genus and, as we shall be concerned here almost entirely with a single species, the generic characters will not be discussed.

Guadua angustifolia Kunth, a giant tropical American bamboo, is native in many lowland areas from Colombia to Paraguay. It is a beautiful but very thorny species, the lower branches being fairly long and armed with 2 or 3 very sharp and hard thorns, or spines, at every node. Higher on the culm the thorns are reduced and finally disappear in the upper branches. A view of a clump that grew for a number of years at the former U. S. Plant Introduction Garden near Brooksville, Florida, is shown on page 361. The internodes of the culm are rather short. The culm sheaths are long triangular, narrowing at the apex to a very small blade that does not separate from it; the sheath is covered with short, erect, and very prickly brown hairs, which easily rub off. The leaves are 4-6 on a branch or twig, with lengths of 2½-10 inches and widths of 5/16-1 inch.

G. angustifolia suffers frost injury at temperatures below 27° or 26° Fahr. and at 2 or 3 degrees lower is killed to the ground. The clump illustrated was killed "root and branch" early in 1928 in an exceptionally severe freeze, when the temperature fell to 17° F. and remained near or below freezing for 2 or 3 days. The original plant was one of a number grown from seed received from Paraguay by the U. S. Department of Agriculture in 1915. No culms much taller than 40 feet were produced during the life of the clump, because of occasional frost injury and perhaps also the comparative shallowness of the surface soil in which the plants were grow-



Dr. David Fairchild

View of a clump, 40 feet high, of the tropical American thorny bamboo Guadua angustifolia, at the former U. S. Plant Introduction Garden, near Brooksville, Fla. It was later killed in an exceptionally severe freeze. This handsome species attains heights up to 100 feet in the Tropics.

ing. Heights up to 60 feet in Paraguay and 80 to 90 feet in Ecuador and Colombia are reported, while at the Experiment Gardens in the Canal Zone, in a great clump grown from a plant brought from Ecuador, there are culms up to 100 feet tall, with diameters of about 8 inches. It is now growing at the Plant Introduction Garden near Coconut Grove, Fla., and at the Federal Experiment Station in Puerto Rico, at Mayaguez. Tacuara and tacuaruzú are common names used for *G. angustifolia* in the more southern reaches of its range. This bamboo is reported to be found of great economic value wherever it grows in South America, being universally used for native housing and numerous other structural and nonstructural purposes. The wood is not very dense but evidently is hard enough to serve for a multitude of uses.

A much smaller guadua, native in the Canal Zone but not yet definitely identified, has also recently been planted at the stations at Coconut Grove, Fla., and Mayaguez, P. R.

The Genus Sinocalamus

The genus Sinocalamus was established by Dr. F. A. McClure in 1940 (New Genera and Species of Bambuseae from Eastern Asia. Lingnan Univ. Sci. Bul. 9: 66-67, 1940) to receive four species of bamboos from the genera Dendrocalamus and Bambusa that were found, by careful studies of the floral characters in the type specimens, not properly to belong in either Dendrocalamus or Bambusa but which agreed among themselves in essential characters that justified their being placed together in a new genus. The type species of Sinocalamus is *S. latiflorus* (Munro) McClure, based on *Dendrocalamus latiflorus* Munro—not yet introduced. As previously stated, the plant originally named *D. latiflorus* is not the bamboo widely known in southern Florida and southern California by that name. The latter bamboo was, in fact, *Bambusa oldhami* (now *Sinocalamus oldhami*) but was misidentified as *D. latiflorus* when first introduced (by private agency) some forty or more years ago. Two of the other three species of the new genus that have been introduced into the United States are *S. beecheyanus* (Munro) McClure and *S. Oldhami* (Munro) McClure, the latter as already explained, being the bamboo heretofore widely but mistakenly known as *D. latiflorus*. The fourth species of the new genus, *S. affinis*

Fred P. Farrar

A clump of Sinocalamus beecheyanus, the Beechey bamboo, with culms 35 feet high, which formerly grew at the home of Mr. Fred P. Farrar in Miami, Fla. This relatively quick-growing species, with its robust shoots, is an important source of edible bamboo shoots in its native habitat, southern China.

Courtesy of Julian Nally

A clump of Sinocalamus oldhami (long known in Florida and California under the misidentification Dendrocalamus latiflorus), shown in the background, at the home of Mr. Julian Nally, Gotha, Fla.

(Rendle) McClure, has not yet become established here.

Sinocalamus beecheyanus (Munro) McClure, a clump of which is illustrated on page 362, is a medium-tall, semi-hardy bamboo with robust culms and edible young shoots. It is native in southeastern Asia, probably south-

ern China. The Beechey bamboo, as it has been called in this country, is the chief source of edible shoots in the region of Canton and throughout the warmer parts of southern China, according to Dr. F. A. McClure, who collected it for the U. S. Department of Agriculture in 1925; the culms have little or no industrial value. Plants of the species from another source, grown at the Huntington Botanic Garden, San Marino, Calif., were reported in 1937 by Mr. William Hertrich, the Curator, to have survived with comparatively little injury temperatures down to 20° Fahr. The culms of *S. beecheyanus* are a rather bright green, often elliptic in cross section and they form a somewhat open clump. The culm sheaths are glabrous except for a fine pubescence at the base, drying to a grayish brown, and the veins become prominent, giving the sheath a striate appearance; the sheath becomes rather narrow at the apex, which is truncate and is surmounted by a small, triangular, nonseparable blade, a little narrower at the base than the apex of the sheath; auricles are lacking; the ligule is of moderate length, 1/16 to ¼ inch on about the lower eight sheaths, and the margin is erose. The leaves are 6 to 10 on a branch or twig and are fairly broad, 3½-7 inches long and ½-1⅛ inches wide.

The clump of the Beechey bamboo shown at the home of Mr. Fred P. Farrar, in Miami, Fla., was an indirect propagation from the introduction, previously mentioned, made by the Department. A plant propagated from the original introduction was sent in 1928 to Dr. J. Petersen, then living near Homestead, Fla., but later in Miami. The owner of another clump in Miami, grown from a division of this, furnished Mr. Farrar with the start for this clump. In the meantime, the plants at Dr. Petersen's place had been destroyed in a fire. Early in 1940, just three years after Mr. Farrar had set out his plant, both his and the parent clump burst into flower, and, although apparently very little seed was formed, both clumps died within a few months. The younger one, at Mr. Farrar's place, had produced three large culms up to 35 feet in height in its last year, while in the older clump there were some culms 40 feet high, with a diameter of 4 inches. A number of new plants grew from seeds beneath the clumps, and some were obtained by Mr. T. B. McClelland, then in charge of the U. S. Plant Introduction Garden near Coconut Grove, Fla., for propagation there. A plant of the clone of *S. beecheyanus* grown at the Huntington Botanic Garden had previously been obtained by the Department, through the courtesy of Mr. Hertrich, and it is under propagation. This clone evidently had a different origin, for the plants of it have as yet shown no sign of flowering. The only important synonym of *S. beecheyanus* is *Bambusa beecheyana*.

Sinocalamus oldhami (Munro) McClure, as twice previously mentioned, is the handsome, semi-hardy, giant bamboo long known, through misidentification, as *Dendrocalamus latiflorus* in southern Florida and southern California. A partial view of a splendid clump about 50 feet high at the home of Mr. Julian Nally, Gotha, Fla., appears on page 363. There are two handsome clumps 55 feet high, with culm diameters up to 3⅛ inches, at the Chinsegut National Wildlife Refuge, near Brooksville, Fla. Isolated clumps are also to be found in many other places throughout southern Florida, including the U. S. Plant Introduction Garden near Coconut Grove. A height of 62 feet for this species is reported from the Canal Zone Experiment Gar-

dens, at Summit. The culm sheaths of *S. oldhami* are much the same in shape as those of *S. beecheyanus* except in having a much wider apex, with the base of the blade greatly extended, equaling the apex of the sheath in width; rudimentary auricles sometimes present. The sheath proper is at first covered with short appressed brown hairs but these largely fall off as the sheath matures and dries; it dries to a somewhat dull straw color and the veins do not become prominent. There are the usual primary and two secondary branches, with a few smaller ones. The leaves, 7-9 on a branch or twig, are 3-9 inches long and ⅝-1½ inches wide. The species endures a minimum temperature of about 20° Fahr., as is well known, and is the fourth member that we have considered of this "climatic" group of variously useful, handsome, oriental bamboos that commonly reach giant proportions; the others are *S. beecheyanus, Bambusa tuldoides,* and *B. ventricosa.*

In closing this series on the more important bamboos that have been introduced and established in the United States, I want to pay especial tribute to my former chief, for many years the active head of the Division of Plant Exploration and Introduction of the U. S. Department of Agriculture, Dr. David Fairchild. He did a great amount of initial work in the study and introduction of many of the oriental and East Indian bamboos, with an unfaltering faith in the ultimate worth to the country of this unique and fascinating group of great and small woody grasses. And it seems a particularly happy circumstance that in his life time there have developed substantial beginnings of a bamboo industry in the United States.

Rhododenden Notes

CLEMENT G. BOWERS, *Editor*

Rhododendrons in the Pacific Northwest

The past decade has seen the introduction of hundreds of new rhododendrons into the Pacific Northwest. Not only have the better European hybrids been imported but species rhododendrons from many parts of Asia. The latter have been grown mostly from seeds acquired from botanical explorations and horticultural institutions and now that many of these species have flowered, we are beginning to realize the world of beauty that can be added to our American gardens.

Few of us have realized in the past the usefulness of this genus or how readily the species adjusted themselves to our climatic conditions. Today there are many enthusiastic growers in this area and an incomplete list shows something over five hundred different species and several hundred excellent hybrids now being grown.

It is impractical to discuss all of these so, for the sake of brevity, I shall touch briefly on the different series and confine my comments to plants I have personally grown or observed. While these include over 350 species and most of the choicer European hybrids, all have not flowered, but the hundreds which have are indicative of their beauty and permanency. Here, as elsewhere, we have two groups of enthusiasts. One that favors hybrids and one that prefers species. I do not subscribe to either group and believe it is

important that the respective usefulness of each type be understood before forming any definite opinion of their merit. There is room for appreciation of both without prejudice to either.

First, the hybrids are given top honors by many for their adaptability to general garden use and often for the size of the flower and improvement of color and texture of bloom. They have definite advantages in the limited collection or in the more or less formal groupings.

However, since size and grandeur are not the only standards of beauty, there are many species which must be given consideration for in these there is a naturalness, often a delicacy which is without comparison in the hybrids which have been developed so far. For light woodland or naturalistic plantings it would seem to be difficult to omit the species. In rock garden rhododendrons one would lose many of the real plant gems if species were eliminated for here again there are few good hybrids.

One might sum up by saying that the beauty and usefulness of a plant should be the determining factor in evaluating it rather than ancestry or native habitat.

Of course before any of these are considered it is necessary to know if the plant is hardy. On this subject we of the Pacific Northwest have the advantage of long English experience which is very useful as we find that practically all which can be grown there, even in the south of England can be successfully grown here.

We have to bear in mind, however, that hardiness is not alone a matter of general climatic conditions or zone ratings, however helpful they may be as general guides. It is more a matter of individual location, exposure, elevation, nearness to salt water and of special importance, air drainage. With a favorable location some of these factors may be disregarded but in others one or more of them may often determine success or failure.

Using the English ratings which are widely accepted in this area, a survey made after the winter of 1943-44, which was the coldest in fifty years, showed that the average gardener was safe with plants rated "A", "B", and "C". Plants rated "D" were successful in favored gardens and those rated "E" suitable only for the experienced grower.

Species

In speaking of species, a word of caution. Most of those we have grown have come from seed and one is bound to encounter variations in seedlings. Again, some seeds may develop uniformly good plants, others very poor ones which might better be consigned to a brush fire. Then there is always the chance of a "bee cross" which may be at variance with the true type. For these reasons my comments may be subject to later modification but they emphasize the importance of measuring the type or species by the better forms, not by the poorer ones. It is to be hoped that in the near future the finest examples will be hand pollinized to develop the best possible strains.

Albiflorum Series and Anthopogon Series

These might well be left to the specialist. I have never seen a plant of *R. albiflorum* worthy of a place in the garden and while I have grown only two species of the Anthopogon series, *R. anthopogon* (B ** Eastern Himalaya and Southern Tibet) and *R. tsarongense* (B ** Southeastern Tibet) they come far from measuring up to comparable plants in other series.

Arboreum Series

The two outstanding species grown here are *R. arboreum* (D **** Indian Himalayas) and *R. insigne* (A *** China). While *R. arboreum* is one of the parents of some fine early red hybrids and receives a top rating those I have grown or seen here are not outstanding or up to the early English descriptions of this plant. However, it is quite possible that we do not have the best type and only new imports will correct this impression. *R. insigne* has light pink flowers with red spots and fairly large trusses . It flowers late and is a good plant for this reason, but slow-growing.

Auriculatum Series

This series has only two species but both are highly desirable. *R. auriculatum* (B ** Hupeh) is a large shrub with sweet-scented, white flowers which come in August. It is a real acquisition not only because of its late flowering period but both its growth and foliage are very attractive. *R. Griersonianum* (D **** Yunnan) is a plant which has had a great influence on recent hybrids and appears to be much hardier than the rating indicates. Flowers are tubular at the base opening like large trumpets of bright geranium-scarlet. It is one of the outstanding of the newer species and well worth growing.

Azalea Series

The truly deciduous azaleas are too widely known to need Pacific Northwest comment and in the opinion of many they are not as generally used here as they deserve to be. Two from Japan however, *R. pentaphyllum* (C ***) and *R. quinquefolium* (B ****) may not be so widely known. *R. pentaphyllum* while attaining twenty-five feet in the wild has been rather slow-growing and after six years is only about three feet high yet it flowers profusely each year with beautiful pink flowers which are about two and one-half inches in diameter and quite open but the texture of the flower is delicate and it does not last long. *R. quinquefolium* is reputed to be slow to flower when young and has certainly lived up to its reputation in my garden for after five years I have still to see a flower. Both of these species cannot be dismissed lightly, however, as they are rated highly and it will take further experience to determine their usefulness to us.

It is in the evergreen and so-called semi-evergreen group that the Pacific Northwest should assume a place of importance as a testing ground. At present the confusion of species, types, improved varieties of complicated hybrids, the mass of conflicting and often duplicate names appear to the average grower like an impenetrable jungle yet we feel certain that out of it will come a number of finer plants than those now in existence.

Already we have outstanding examples in some of the Japanese azaleas received prior to the war.

Without attempting scientific classification most of these may be placed in several general groups; Kurume, M x K (Malvatica crosses), Macrantha, *R. mucronatum*, Eriocarpum (a variety of *R. Simsii*), Macrindicum (apparently a cross between Macrantha hybrids and *R. indicum*) and Scabrum. In many of these the ancestry is so mixed that correct classification of plants is difficult if not impossible at the present time and their hardiness varies to a marked degree.

The Kurumes we are told were first introduced into the United States at the San Francisco fair of 1915, but were lost to commerce and reintroduced by Mr. E. H. Wilson of the Arnold Arboretum. This is a splendid

group but highly variable in hardiness. Some, like Benigiri, Hinodegiri, Snow, Hinomayo, have withstood our winter weather for a number of years but many others are on the "tender side" and until some controlled scientific study is made we will have to continue our method of trial and error.

M × K azaleas have been successfully grown in England for a number of years and include some splendid plants. Our difficulty is in securing the desirable varieties but those already grown have been hardy and excellent plants.

The Macrantha hybrids and clones all seem hardy and while their general form is twiggy and not usually considered as desirable as many others, they come in a beautiful variety of colors and most of them flower in June so they extend the flowering period over a time when few of this genus is in bloom.

R. mucronatum (usually sold as *Azalea ledifolia alba* and *ledifolia rosea*) can be rated from excellent to poor depending on the individual plant. The finer forms are among the most beautiful azaleas in existence therefore clonal varieties of known value should be selected. Noordtianum (Luikiu Azalea) is among the best but there are many others.

The Eriocarpum group is best represented by Azalea Gumpo which is low-growing and has beautiful pure white, frilled flowers. In this group are others such as Pink Gumpo, Red Gumpo, and Album giganteum, the latter having flowers six inches across or so the catalog says. Mine has not flowered.

Little is known of the Macrindicum group as only a few arrived before the war but it should be good as many of them are known to stand considerable cold and they are unusually large.

The Scabrum group intrigues many of us as some are reputed to attain a height of twenty feet and while this group is usually rated "E" under English ratings, one variety, Red Emperor, has grown successfully in my garden for six years but I am beginning to suspect its parentage or is authenticity. It shows no sign of attaining great height and is a poor color. Only additional importations will prove the merit of this group.

Barbatum Series

This series seems slow to flower but includes some excellent species. *R. barbatum* (B **** India) grows from thirty to sixty feet in height and is a beautiful plant. The flower trusses are comparatively small but this is offset by the brilliancy of color. *R. strigillosum* (C *** China) is also outstanding. *R. pachytrichum* (C—China) has not proved worthy of growing from seed although there is a form in England which received an Award of Merit.

Boothii Series

This group has won considerable admiration among those who like low-growing and rock garden rhododendrons. *R. deleiense* (C *** India) and *R. tephropeplum* (C *** South-Eastern Tibet, China and Upper Burma) are similar; *R. deleiense* has a wider leaf and being slightly fragrant. Two splendid shrubs. For the rock garden *R. leucaspis* (C *** Tibet and Tsango Gorge) has a pure white open flower and beautiful hairy leaves, while *R. megeratum* (D * Yunnan and Upper Burma) is similar with bright yellow flowers.

Camelliaeflorum Series

I have grown a number of plants of *R. camelliaeflorum* (D — Himalaya) and while it is not rated as tender most of the small plants winterkilled. Sev-

eral survived and are about five feet high but have never flowered.

Campanulatum Series

All hardy and while not rated high for garden merit *R. campanulatum* (B ** Himalaya) is a most interesting foliage plant. The leaves have indumentum of rich brown that is lovely when the plants get large enough to display it. The upper surface is deep-green. Plants grown in the shade are more blue than those in the open.

Campylogynum Series

Here are two splendid plants. *R. myrtilloides* (A *** Northeastern Burma) with glossy foliage and small plum-purple flowers, is suitable for the rock garden and *R. campylogynum* (A ** Yunnan) is said to grow to six feet but seems to remain lower in our area.

Camtschaticum Series

Have seen only *R. camtschaticum* (A — Alaska). These plants were brought out of Alaska but seemed to resent moving and soon died.

Carolinianum Series

Better known in the East than on the West Coast but *R. carolinianum* (A—North Carolina and Eastern U. S.) as grown here is white to pink rather than rosy purple. It adapts itself readily to naturalistic plantings.

Cephalanthum Series

About a half dozen good plants of which *R. ledoides* (C *** Yunnan) and *R. sphaeranthum* (C *** Yunnan) are probably the favorites. They make excellent rockery plants with white to pink daphne-like flowers, slightly scented.

Cinnabarinum Series

A very unusual and interesting group. Have grown a number of *R. cinnabarinum* (B **** Sikkim Himalayas) from seed and all are good but vary in leaf coloring and flowering time. This plant is said to grow only to six feet but several are somewhat taller.

Dauricum Series

Two species only, but one, *R. mucronulatum* (B **** Northeastern Asia and Japan) should be in every garden. Often mistaken for an azalea, it flowers early, about the time the forsythias bloom, has flowers before new leaves and is a bright mauve-pink.

Edgeworthii Series

R. bullatum (D **** Yunnan) is the only one I have succeeded in growing and this shows a tendency to die back a few inches in occasional years but it is well worth giving protection as it has large white, sweet-scented flowers and interesting, puckered, leathery leaves.

Falconeri Series

This large-leaf group should be grown wherever possible if only as a foliage plant for outside of the Grande Series there is nothing in the genus comparable to them. They look like something brought out of the tropical jungle and yet they are comparatively hardy. With protection from wind and winter sun mine have withstood temperatures of 12° without being cut or defoliated. *R. Falconeri* (C **** Himalayas) is considered the finest and grows to a tree of forty to fifty feet, with pale yellow flowers. *R. Hodgsonii* (B * Himalaya) has a longer, slightly narrower leaf and while it is said to have a poor flower it is still one of the best foliage plants I have grown. I believe the entire series is slow to flower as several plants fifteen years old have never produced a single flower bud.

Ferrugineum Series

Good rock plants and while not especially attractive have the advantage of being thoroughly hardy and flowering late. *R. ferrugineum* (A *) and *R. hirsutum* (A *) both come from the Alps.

Fortunei Series

Here are at least a dozen of the finest and most useful rhododendrons grown and they give promise of much wider usage than is now accorded them. Most are rated "B" and "C" for hardiness and different species flower at different times over a period of several months. Those of greatest merit in the hardier classifications are *R. calophytum* (B *** China), *R. sutchuenense* (B *** China), *R. discolor* (B **** China) and *R. orbiculare* (B *** China).

Fulvum Series

A small series and I have grown only one species, *R. fulvum* (B ** Yunnan). These plants are too small to evaluate but it is said they grow to about twenty feet and should be interesting woodland plants.

Glaucum Series

A series of which I have grown several species for a number of years and they have grown in my appreciation each year. This is one of the series which does not resemble the typical rhododendron. It has small leaves and flowers and an individual beauty hard to resist. *R. glaucum* (B ** Sikkum) and *R. pruniflorum* (C *** Northeastern Burma)are representatives of the series.

Grande Series

Definitely on the tender side but some more hardy than others. *R. sinogrande* (C **** Western Yunnan, Northeastern Burma and Southeastern Tibet) has the largest leaf of any plant I have grown, sometimes measuring over twenty inches in length. It seems more tender than the smaller leaf species of the same rating and was defoliated at 12° but came back satisfactorily.

Heliolepis Series

R. rubiginosum (A *** Yunnan) and *R. desquamatum* (D ** Western Yunnan and Northern Burma) are the best of the series. *R. rubiginosum* is most widely grown and is extremely variable in color. Generally a lilac-rose, some plants are almost a clear pink. Very floriferous and a splendid plant at the edge of a wood or in a naturalistic planting where large colorful displays are desired. Eventually grows to thirty feet.

Irroratum Series

A comparatively large series with many species and sub-species only a few of which have been grown in the Pacific Northwest. *R. irroratum* (C ** Yunnan) is good but nothing special, however one plant (probably a "bee cross") varies from the true form and is one of the finest early pinks I have grown. This plant, now over nine feet in height, flowers profusely every March and withstands the stiff winds and rains of that period as no other plant I have seen. *R. Elliottii* (Kingdom Ward #7725, D **** Manipur, Japvo, Naga Hills) is a splendid crimson scarlet of good form and texture.

Lacteum Series

The one species which has flowered for me, *R. lacteum* (C **** Yunnan) unfortunately proved to be the white form which did not measure up to the rating of the clear yellow which is considered one of the best.

Lapponicum Series

One of the largest and most confus-

ing series. Some English authorities have said these might well be ignored except for perhaps a dozen species. I am heartily in accord with that statement for the differences are so minor, and many species are of even questionable merit that they have little or no garden value. But among them are some plants which every grower will prize, *R. cantabile* (A ****), *R. hippophaeoides* (A ****), *R. russatum* (A ****) and *R. scintillans* (A ****) all from Yunnan are in this top bracket.

Lepidotum Series

A small shrubby series of which *R. imperator* (A *** Burma) is an outstanding gem and a splendid rock garden plant.

Maddenii Series

A large but somewhat tender series some of which should be grown wherever possible. Among the hardier ones worthy of mention are *R. ciliatum* (C *** Sikkim) Himalayas), a small spreading shrub which is widely grown and has blush to deep pink flowers; grows low in open locations but attains a height of six feet in shady ones; *R. Valentinianum* (D *** Yunnan), one of the best rock garden shrubs with lovely butter-yellow flowers; *R. crassum* (D *** Western Yunnan and Upper Burma), a large shrub or tree and highly desirable because of its fragrant white flowers which come in June and July. This I consider one of the top ranking rhododendrons.

Moupinense Series

Another small series with one of the finest low-growing species of the genus, *R. moupinense* (B *** Eastern Tibet and Szechuan). This plant flowers in February, is low-growing and splendid for a rockery.

Neriiflorum Series

One of the most important series with a large number of excellent species and thoroughly hardy in our area. Mostly medium-sized shrubs but some splendid rock plants such as *R. Forrestii* (B **** Northwestern Yunnan and Southeastern Tibet) and *R. repens* (A **** same area) both somewhat difficult to grow but well worth the effort. Reds predominate in this series but there are several excellent ones in orange shades as well as rose and yellow. Many fine species.

Ovatum Series

All tender and to my knowledge none have been grown in this area.

Ponticum Series

Some good plants but nothing outstanding.

Saluenense Series

A group of dwarf shrubs to delight any rock gardener. *R. calostrotum* (A *** Northeastern Burma), *R. keleticum* (A ** Southeastern Tibet), *R. radicans* (B **** Southeastern Tibet) and *R. saluenense* (A *** Northwestern Yunnan) are the best I have grown and I consider them among the most important of the dwarf shrubs.

Scabrifolium Series

A group of medium-sized shrubs with small leaves and flowers but very attractive in any naturalistic location. *R. pubescens* (B *** Szechuan) is probably the best and *R. spinuliferum* (C *** Yunnan) the most unusual. It looks like a flowering fire cracker.

Semibarbatum Series

Only one species and do not know of it being grown here.

Taliense Series

A large series but does not seem to possess sufficient merit for general use. A few fairly good garden plants.

Thomsonii Series

Certainly one of the top-ranking series containing many excellent species most of them thoroughly hardy. Have grown about twenty and not a bad one in the lot. In the Subseries Campylocarpum, *R. campylocarpum* (B **** India), yellow, and *R. callimorphum* (B *** Western Yunan), pink, are excellent. In Subseries Souliei one should grow at least six but I mention only three; *R. Williamsianum* (C **** Szechuan), a low-growing plant with pink flowers and heart-shaped leaves; *R. Souliei* (B **** Western Szechuan), a large shrub with white to rose-colored flowers and *R. Wardii* (C *** Western Yunnan), a splendid yellow. In the Subseries Thomsonii, *R. Thomsonii* (B **** India) and *R. Stewartianum* (C *** Upper Burma, Western Yunnan, Southeastern Tibet) are among the best.

Trichocladum Series

Have grown none. Ratings indicate few plants of merit.

Triflorum Series

This group I regret to report is not as widely grown as it deserves to be for it includes some of the most beautiful flowers in existence. Instead of the grandeur of large flower trusses and magnificent leaves these plants have a lace-like delicacy, a charm and grace of line which is seen only in nature's aristocrats. The flowers are more like an azalea, with long protruding stamens; the colors are soft and delicate. One should definitely grow *R. Augustinii* (C **** Western Hupeh and Szechuan) which comes in various shades from deep blue to light lavender blue; and *R. yunnanense* (B **** Yunnan) with white to pinkish and orchid-colored flowers dotted with red. This plant in a good form would be classed in the top bracket of choice rhododendrons.

Vaccinioides Series

Have never seen one of this series in the Pacific Northwest probably because of the low ratings and tenderness.

Virgatum Series.

Three excellent low-growing shrubs of which *R. racemosum* (A **** Yunnan) is by far the most outstanding.

Explanation of ratings as given in parentheses after each species:

"A"—Hardy anywhere in the British Isles and may be planted in full exposure if desired.

"B"—Hardy anywhere in the British Isles but requires some shade to obtain best results.

"C"—Hardy along the seaboard and in warm gardens inland.

"D"—Hardy in south and west but requires shelter even in warm gardens inland.

Asterisks indicate merit, four (****) being the highest rating.—From the 1939 Yearbook of the Rhododendron Association (Great Britain).

HERBERT IHRIG.

University of Washington Rhododendron Show

The first annual rhododendron show in the State of Washington was held in Seattle on May 4 and 5 in the University of Washington Arboretum. It was sponsored jointly by the University and the Arboretum Foundation, founder of the Arboretum, and its representative in civic undertakings. It is, of course, generally known among gardeners and horticulturists that nowhere in the world can rhododendrons in all their varieties be better grown than here, and in few places can they be equalled, with the climatic conditions prevailing in the coastal region of Washington, Oregon, and British Columbia. There has been an almost spontaneous movement toward the use of rhododendrons in the gardens in the Northwest in the last few years which

the continued emphasis of the University of Washington Arboretum and the American Rhododendron Society have had a large part in. Many amateur growers have imported the choice English hybrids for their own gardens and have generously allowed their friends among the nurserymen to propagate from them, so that such varieties as Mrs. G. W. Leak, Unknown Warrior, Loder's King George, Unique and many others are becoming as much used as the old Catawbiense was in the 1910's and bid fair to run it out to less favorable climes.

The emphasis in the Arboretum has been on rhododendrons and azaleas and with the view of interesting a greater number of people in the Arboretum and its fine collection of rhododendrons, the Show was planned in a natural setting of the Arboretum adjoining Rhododendron Glen. This Glen is a nine-acre tract winding down a stream-bed along hillsides shaded by western dogwoods (*Cornus Nuttalli*) and with a background of native Douglas firs and western hemlocks. In it over a period of years have been planted upwards of 250 varieties of rhododendrons, both species and hybrids. It was full of bloom at the time of the Rhododendron Show and was a fitting prelude for the spectacular exhibition in the tent at its summit.

Believing that the Show had a value artistically as well as horticulturally, an effort was made to stage it as beautifully as possible, and the resulting interest on the part of the general public (which in the Northwest is always the gardening public) was evidence of the soundness of this theory. The plants exhibited were sunk in sawdust and peat to a depth of 12 inches so that they seemed actually planted in groups as they would be in a garden. The ease with which they could be kept damp in this way was also important. In the same way, the cut blooms were kept fresh in deep receptacles so that at the end of the Show they were with almost no exception as fresh as when they were brought in. Pint, quart, and two-quart fruit jars painted an olive green on the outside were used and were most practical and inconspicuous. The tent was a soft green color and table coverings and facings and backgrounds were carried out in the same tones. One side of the tent opened onto a bank covered with blooming azaleas with rustic steps leading down from it to the axis of the Show tent centerpiece. This was a small stone garden figure of a chubby boy which was raised to eye height and banked at the base with azaleas at the level of the tables for the cut blooms.

Three thousand persons attended the Show at a paid admission of sixty-five cents. Information was sought at every step of their pilgrimage through the Show and the inquiries already received by the Arboretum and nurserymen indicates the success of the undertaking.

From the horticultural standpoint, a high standard was set and there were few exhibits which would not have stood out in any surroundings. Eighty-three different varieties were exhibited —twenty varieties of species rhododendrons, fifty varieties of hybrid rhododendrons, thirteen varieties of azaleas. The bloom adjudged finest among the cut trusses was Lady Chamberlain. It is a direct importation of Mr. Donald G. Graham of Seattle who has recently returned from England where he was stationed during the War. Its rare beauty allowed of no conflict of opinion among the judges. It is a neriiflorum hybrid of a tawny chamois golden pink —which description would immediately be questioned for accuracy by anyone who has seen it, for it defies description. The perfection of form and

foliage even in a single bloom is outstanding and on the plant itself hanging its trumpets among the dark green leaves, it must of necessity be coveted by every gardener. As a direct contrast to its delicacy, Loder's King George exhibited by Ralph DeClements of Bremerton, also an amateur grower of distinction, towered above the heads of crowd in the tent with its tremendous flowers perfection itself. This plant received the award for the finest plant in the Show and again no one could question the judges' choice.

In spite of the fact that the Show was a little early for the season, and that the schedule did not entirely fit in with the needs of the locale, the list of exhibits is very impressive. With a later date set for next year and almost twice as much space planned for, we do not doubt that we shall have an even more imposing list. There were two unnamed hybrids exhibited and we hope to encourage growers in this field through the stimulus of the Show.

The list of varieties shown follows:

Species

Augustinii, campylocarpum, calostrotum, californicum, carolinianum, decorum, Davidsonianum, didymum, exquisitum, fastigiatum, Fortunei, glaucum, Griersonianum, impeditum, neriiflorum, oreotrephes, sinogrande, Thomsonii, tephropeplum, yunnanense.

Azaleas

Types and unnamed varieties of:

Altaclarense, ledifolium, mollis, occidentalis, Vaseyii, Albrechti, indicum balsaminaeflorum, and the hybrids, Ruby, Apple Blossom, Peach Blow, Laughing Water, Christmas Cheer, and Snow.

Hybrid Rhododendrons

Alice**, Bagshot Ruby*, Butterfly**, Beauty of Littleworth, Bow Bells*, C. B. Van Ness, Corona*, Cory Koster, Cunningham's White, Cynthia*, Cynthia Improved*, Earl of Athlone**, Elspeth Slocock, Fabia*, Faggetter's Favorite, Garnet*, Griersonianum hybrid*, Griersonianum × Elliottii*, Lady Chamberlain, Lady Primrose*, Lady Rosebery, Loderi*, Loderi King George, Loder's White, Luscombeii**, Mrs. C. B. Van Ness*, Mrs. Furnival, Mrs. G. W. Leak**, Mme. Wagner, Purple Splendor*, Richard Gill*, Rosamund Millais, Rothschild's Hybrid, Smithii Aureum*, Susan, Tallyho*, Tester Van Dyer*, The Hon. Joyce Montagu, Unnamed hybrid (2), Unique**, Van Ness Sensation**.

Exhibited by the Arboretum

Eureka Maid, Gomer Waterer, Lady Bessborough, Mrs. W. C. Slocock, Pink Pearl, Van Weerden Paelman, Souvenir W. C. Slocock, White Pearl.

MRS. ARTHUR J. KRAUSS.
Seattle, Wash.

Azaleas in Ohio

I received your letter asking me to give my experience with azaleas. I should have answered your letter sooner but I know there was little I could give that would be information except to those few who are situated as I am in the heart of a great limestone section. With cement factories near and limestone quarries for miles around and great deposits of Lower Silurian limestone shale, it does not make a very promising picture for any one who is interested in sour soil plants and wants to grow some of them.

* Commercial exhibit.
** Both Commercial and Amateurs exhibited. No stars—Amateur exhibit.

There is always a desire to grow something unusual and at the same time something that everyone around you does not have, and azaleas are just that.

I have a bed of azaleas about sixteen feet long and four feet wide. I excavated two and one half feet deep, threw out the top soil to itself, and sifted the top soil with one quarter inch mesh screen to get out any limestone pebbles that might be in it. I filled in the bottom of the excavation with brush and leaves and filled in some good top soil mixed with sand and peat moss, as I neared the ground level, adding a little more sand and peat moss building the bed four inches above the level, by adding oak leaves and peat moss each fall it is six inches above level. The advice to add a heavy coat of oak leaves each fall and leave them on to rot up would in time make the bed entirely too high.

My bed is seven years old, and as I started with rooted cuttings purchased from an Eastern nursery, what few lived are not very large. I tried several years with the rooted cuttings but found I was getting nowhere with them. We are in the interior of the country where the latter part of summer gets very hot and dry, and at that time the cisterns of rain water get very low, just at the critical time when azaleas need most watering, so most of the rooted cuttings would perish. I have switched to larger B. & B. plants and plant them in the fall. My bed is now full of very nice plants. The rooted cuttings would have been all right, no doubt, if I had been in a location with much moisture in the air as near the coast or in the mountains.

Another thing that is against us here is that we are about at the most northern limit of the belt where azaleas can be grown. This necessitates a careful selection of kinds. I find certain kinds listed as hardy will just not do here; Cleopatra is one, a Kaempferi Hybrid. These hybrids are said to be the hardiest of the evergreen class. I tried several and they all winter killed. I have what I bought for Atalanta, which is listed as purple, a Kaempferi hybrid evergreen, but my plant is evergreen and has beautiful large pink flowers, more desirable than any purple would be. Hinodegiri has not proven too hardy with me. I lost several but now have one that went through last winter nicely. I like the color of the one I now have. They apparently vary much in color as one I had was a dirty brick red. I found the plants I bought from the extreme southern states were not hardy here. The same varieties from northern nurseries went through winter with no winter damage. I have Amoena, Amoena Coccinea, Flame, of the Kurume azaleas, these with J. T. Lovett and Maxwellii, are doing nicely. I have Hexe but do not know what it intends to do. It was planted late last fall and does not look any too well. Maxwellii froze back some on the west side of the bush, but with the excessive rains we have been having it is making good growth. Most azaleas are making wonderful growth; the constant rains seem to be what they need.

Altaclarensis and one of our native azaleas have new growth about a foot long and this is just June first. If they keep up this growth it will not be long until they will be a solid mat. I am afraid I have them planted too close but by the pictures I see of azalea plantings they form a solid bed.

I am trying out one of Gable's hardy azalea, Elizabeth Gable, listed as rose pink, but the one I have is hose-in-hose and the same color or shade of Mossieana (listed as purple). I have Mossieana and Cardinalis of the Arnoldiana group; both are evergreen.

Mucronulata blooms in late March with me and has the rankest growth of all, but last spring a year ago it was in full bloom when a severe freeze almost killed it. It is making some growth this year and I think it will recover. I grew it from a cutting and it was four feet high. *Poukhanensis,* or what I have been growing for it, was not near so far along that spring and bloomed nicely and was in no way hurt by the freeze. It is listed as deciduous and fragrant and rose purple. My plant is about evergreen, flowers orchid and not fragrant. It is second to bloom of the azaleas I have; then Flame, Mossieana, Amoena, Cardinalis and Hinodegiri follow it, with Atalanta, Ledifolia alba and Elizabeth Gable last.

My Schlippenbachii did not bloom this year. It was set last fall but it looks as if it is forming buds now. I am not acquainted with it so it may turn out to be leaf growth. I have two *Rhododendron catawbiense* in the bed; the flowers are lavender; I had hoped they would be red purple.

I read of planting sour soil plants under the taller azaleas, but I find the better sour soil plants will not stand the azalea fertilizer. I had nice arbutus and orchids in the bed and when the commercial sour soil fertilizer got near them all died out. I have had no trouble resetting arbutus from the wild if they are watered well with a strong B-1 solution. I received plants from North Carolina from the wild, that were so dry on arrival I had considered them past growing. I soaked them for four hours in B-1 solution (strong) and planted them and watered with the solution they were soaked in and all grew and bloomed the next year. Partridge berry and Foam flower do not mind strong fertilizer.

W. N. Leighty.

Germantown, Ohio.

Loiseleuria procumbens

This dwarf relative of the azaleas presents a challenge away from its mountain home. It can be grown, however, and when planted with other dwarf shrubs in a proper setting exerts its subtle charm. Here in northwestern Connecticut two plants of *Loiseleuria procumbens* have been growing for two years but have failed to flower. One plant which may be of the more vigorous European variety, has put on excellent annual growth with sprawling stems reaching out about six inches from the central tuft, and this year each of these stems has put on a crown of new shoots about four inches long. When these are pegged down they should make a neat clumpy new plant to attempt in another location to try to induce flowering.

The other plant, collected in the White Mountains, has not shown such vigor but maintains a dense tufted growth.

These plants are growing at the foot of a north slope in gravelly soil to which was added a generous supply of old rotted peat. The area is shaded by fairly tall Douglas fir trees which allow the sun to reach the plants only as it slants down the hill in the afternoon.

When new propagations are ready to be set out they will be tried in a nearby location which has the same type of gravelly acid soil but is in full sunlight, tempered somewhat by sloping to the north. In this location heaths and heathers have done remarkably well and suggest further experiment with related plants.

H. Lincoln Foster.

Norfolk, Conn.

Overwintering Dormant Seedlings

Contrary to common advice, we occasionally experience success acting in desperation. Such was the happy out-

come of storing flats of rhododendron seedlings in a cool garage. Seed of rhododendron and azalea species arrived late in the spring of 1945. Though germination was satisfactory, growth was very slow in a shaded greenhouse. Transplanted seedlings seemed to stand still, which, with the press of other business, discouraged further transplanting; so a majority of the plants were left in the original seed flats, crowded as they were.

These were kept in the greenhouse until the heat was turned on in the fall. Then arose the question of how to handle the tiny plants. The outdoor frames, which were full of transplanted azaleas and rhododendrons, were in such poor repair that nothing would make them mouse-proof. A sad experience the winter before had proved the partiality of mice for most species of ericaceous plants. (*Rhododendron mucronulatum* they apparently find unappetizing.)

In desperation, the flats of seedlings were moved into a two-car garage. This room has five windows, three on the north and two on the east. Heat pipes for an apartment above run along the ceiling, but with the wide doors facing north the room is not warm in severe weather. The temperature at table height on occasion reached 20° F.

The flats were kept on the dry side with only occasional watering during warm spells. All of the seedlings remained evergreen, including *Rhododendron obtusum* var. *kaempferi* and × *arnoldiana*, *mucronulatum*, *viscosum*, *ledifolium*, × *gandavense*, *roseum* and *pennsylvanicum*.

As the days began to lengthen in February there were signs of new life, especially in *Rhododendron mucronulatum*, so all were brought into the greenhouse. Those that were crowded in their original seed flats were transplanted. *Mucronulatum*, *ledifolium*, × *arnoldiana*, *kaempferi*, and *viscosum* responded immediately and by May had put on wonderful new growth, demanding a second transplanting. Similarly *Ledum groenlandicum*, *Pieris japonica*, *Rhododendron occidentale* and *atlanticum*, all of which, sown earlier, were good size by fall, but had been brought in for safety's sake, went right into strong new growth.

Rhododendron viscosum, × *gandavense*, *roseum* and *pennsylvanicum* did not take so kindly to the treatment and sulked for a long time before deciding to take up growing again. These sulkers had all been transplanted the summer before when very small and had made poor growth, which may explain their sluggishness.

The fine response of the others seems to indicate that such storage has definite possibilities for rhododendron in their tender youth.

H. Lincoln Foster.
Norfolk, Conn.

Azalea, Hazel Dawson (See page 379)

Although many a person has seen this excellent azalea in my garden I have never known one of them to order one from the nursery! This is a puzzle for the plant is vigorous, erect growing, winter hardy, semi-evergreen and in mid-season covered with large rosy purple flowers. These are particularly fine as the very base of the corolla in the section known as the tube, the color is almost pure scarlet and when the sun shines through the flower, this inner warmth makes a fine color for all except the traditionally conditioned-against-purple-people, whose tribe fortunately is dying out. Like all azaleas of its kind, it comes easily from cuttings and will make excellent layers, if you are too lazy to make a cutting.

On the chance that there might be records of its parentage, a letter was

sent to the Eastern Nurseries in 1945 and Miss Hodgson very kindly replied in part:

". . . I am only too pleased to give you what information I have regarding Azalea Hazel Dawson, which I am sorry to say is quite limited.

"Azalea Hazel Dawson is a Dawson hybrid. It is a cross between A. Kaempferi and A. ledifolia, and is lilac mauve in color. 'Silver Medal.'

"I have checked through our old catalogues and find that it was first listed in 1923, which is about 8 years after the death of Jackson T. Dawson. Therefore, on that assumption I think the hybridist was the late Henry Sargent Dawson, rather than the father. However, I may be mistaken as to the originator, but if it was introduced by the late Jackson T. Dawson, feel confident that there would be a record of it in the library at Horticulture, Horticulture Hall, Boston."

Several other inquiries brought no further light on the azalea. The cross seems quite in order for it is one that most of us have made. None of my own hybrids approach this one and none that I have seen come up to it in color though one by Mr. Yerkes, is as large, though much paler.

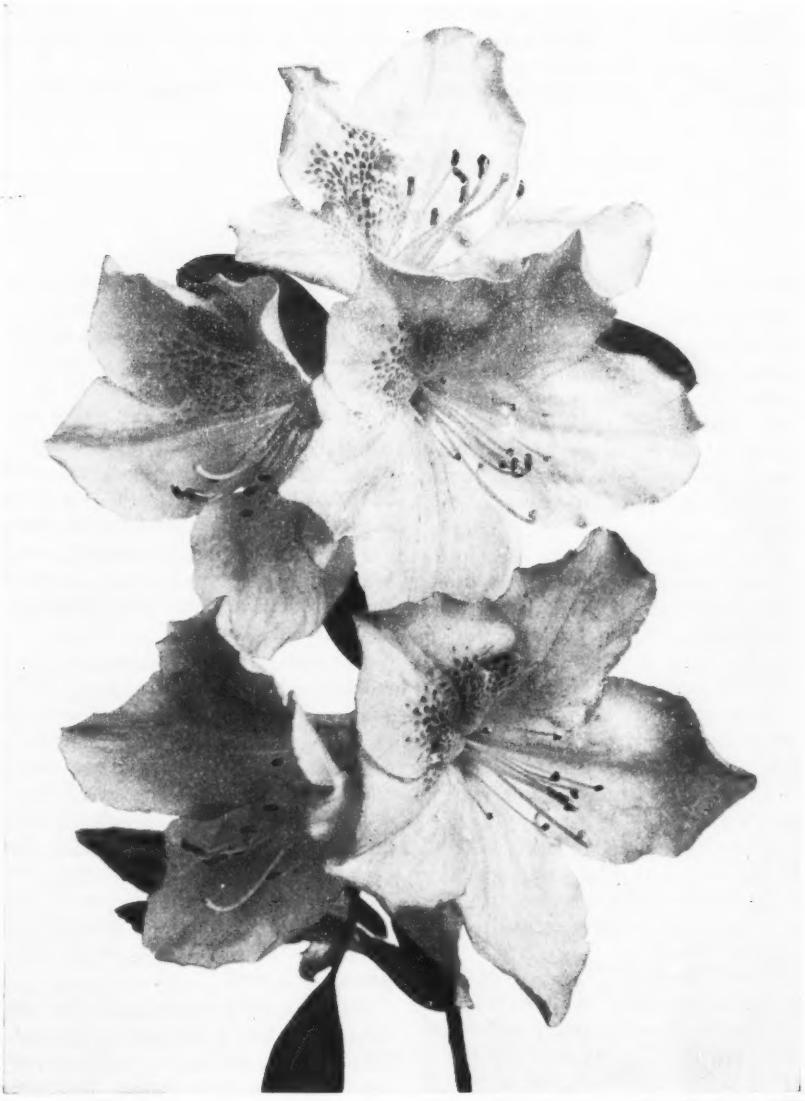
Hybrid azalea, Mai-hume. (See frontispiece)

The accompanying photograph is given, not because this clone is outstanding above all its fellows, but because it shows as well as any other the type of flower variation that may come on one clone. The variants seem to be fairly uniform on each shoot so that if one takes cuttings from a definite shoot, the resulting plant will appear to have only one sort of flower, until some fine day it decides to sport and give you one or another of the variants possible.

The upper right hand flower shows the typical deep rose red bloom which represents one extreme; the lower right flower, shows the other, a faintly tinted white with only a little flecking of color in the "blotch." The upper left shows an intermediate pale pink with one lobe and a part of a second, the deep rose color of the right hand flower. The lower left, shows the same sort of pale pink flower but with a heavy blotch of colored dots in the proper area. It shows also a tendency towards whiteness on the edges of the lobes which is a familiar color pattern in many of the "Indian" azaleas. One can foresee any amount of trouble for the nurseryman who will have to receive queries from customers who may get quite different looking plants from the same name clone.

In Dr. Bower's Rhododendrons and Azaleas (p. 224) in his preliminary discussion of the section Tsutsuji there is a paragraph; "Yellow flower color does not occur in the subseries. The flowers are characterized by typical anthocyanin pigmentation, r u n n i n g through the delicate pinks to rose, crimson and lilac colors. White forms are relatively abundant. Marking in the forms of spots or blotches are common. Chimeras occur as flakes and segments in the Indian azaleas." This would explain the conditions in the flower on the upper left, but perhaps not all the rest. Indeed the present writer feels that there is much more to be said in the matter of flower patterns and their inheritance and it would be his preliminary opinion that while chimeras which produce sectional colorations are all very well, that flaking as such has been inherited in too many cases to be looked upon as such a successful chimera!

But whatever the explanation that may evolve or the doctor's degrees that



Robert L. Taylor

Azalea, Hazel Dawson

[*See page 377*]

may later be earned in the investigation of the behavior of certain azalea patterns, the plants themselves are lovely things and well worth the attention that has been lavished on them through the years by gardeners in every part of the world.

Takoma Park, Md.

Narcissus Notes

B. Y. Morrison, *Editor*

Daffodils in 1946, Dallas, Texas

To a certain extent, conditions for daffodil bloom this season appeared not so favorable, in that many established clumps failed to show buds and others came blind. While in a measure disappointing, on the whole this may have been as well, since the writer had more time for individual observation and study.

The following notes are principally devoted to some of the recent additions to my collection. Several are from New Zealand or Australia, by way of the American Northwest, some from Michigan and some from Maryland. In none was there an appreciable difference in performance—perhaps only slightly larger bulbs from the Northwest. All were true to name and as described.

Surprisingly, La Argentina, a Poetaz, bloomed first of all and abundantly. At the close of the season, this produced a second time, normally. All were fine blooms.

Silver Chimes, a Triandus and Poetaz cross, normally a late bloomer, was next, with two scapes to each of six bulbs, bearing from four to eight florets of pearly whiteness on scapes of unusual height, with long-lasting flowers. A treasure this, in any collection of daffodils.

As for the New Zealanders or Australians, of which there are a few:

(1) Shirley Wyness (4a) was eagerly watched for the promised "pink cup"; my fingers were crossed to be sure, but when it came into bloom—a tall, vigorous looking plant with sturdy stem—I was satisfied. The crown was truly "pink" by the second morning.

(2) Margaret Fell (2b) has a fine white perianth with yellow crown, bordered with orange red. A tall and beautiful flower which withstood wind and rain better than many shorter ones.

(3) Melva Fell (2b) another very beautiful white flower with a band of red, not quite as tall. My notes say "an exquisite flower."

(4) Margaret and Melva are more delicately beautiful, but David West (4a), a midseason bloomer of unusual charm, would probably hold the greatest appeal for the *size enthusiast*. This, with its finely imbricated cup of cream gradually becoming pure white, with buff-cream shading, would likely become first choice. One stands and looks—in doubt; he looks again and again to decide at least that David West is a *must*. Rightly or no, size has again scored.

Polindra (2b) might easily be considered as fine a Bicolor Incomparabilis as one could wish to see and possess. Its perianth is broad, flat, pure white and of fine substance. The crown, clear yellow and serrated at the mouth, completes an altogether magnificent flower of commanding height and size.

Looking across Polindra and seeing St. Egwin (3a), a splendid Barrii of

clear soft yellow, of great height and finely proportioned segments, one stands amazed at the skill of the originator of these masterpieces. St. Egwin is majestic in its golden radiance.

Rustum Pasha (2a)—tall and a striking bit of color for this climate; said to be sunproof. Apparently a good doer, since in each of two positions—full sun and semi-shade—it did not lose its bright color.

Effective, a Bicolor with slender trumpet of gold which extends into the perianth, forming a halo of the same color. A beautiful flower and apparently a good garden subject.

Adler (2b) is a never failing joy in late afternoon particularly. Its large flat, white perianth and cup of yellow seem to absorb something from the light which softens the texture of the whole, making it a most lovely flower. A good grower and prolific bloomer.

Greeting, an Incomparabilis, not to be overlooked. This is not an overly tall daffodil, but one of breathtaking beauty with its large symmetrical flower of white—smooth as Carrara marble, with a perfectly flat perianth. When a day or so old, the perianth slightly reflexes, after the manner of Folly. A rare addition to any collection.

Last of all is a precious small thing, Acolyte, which gives an impression of Triandus blood. A late bloomer of charm and appeal to critical observers that can surely take a place along with that other small beauty, Beryl.

Mrs. William H. Benners.

Daffodils in New Hampshire

It isn't very profitable to try to raise haphazard daffodil seedlings, except as a matter of satisfying one's curiosity. There is a chance, but it is a very small chance, that a marvel may appear in a group of casual seedlings. In all likelihood, however, there will be nothing as fine as many varieties already in the market.

Still, it is rather fun to plant a few seeds occasionally to see what will develop and I was pleased to see two very fair yellow trumpets among a few seedlings this year, for yellow trumpers are decidedly in the minority in my garden. I had thought that Aerolite was thoroughly dependable but it didn't appear at all in the spring of 1945. At present King of the North, Sulphur Prince, Dawson City and Yukon are doing well, and there is an occasional flower from several others but they cannot be said to be dependable.

Except for these and some of the miniature species, several of which never appeared above ground at all, all hardy daffodils seem to like our conditions. There will be, of course, an occasional variety that will sulk, as for instance Mrs. Ernst H. Krelage, with which I never had any success while Beersheba, Kantara and several others have flourished exceedingly. I still hope to have some of the newer whites some day.

I had always thought Kantara a trifle short-stemmed for the size of the flower but this year the stems were tall enough and a clump of 50 or more of the great white flowers was a sight to see, even if the individual blooms did not have Beersheba's smoothness.

In spite of extremes of temperature, several people here have had fair success with old Double White, but in every instance with which I am acquainted the bulbs are planted in situations where the soil never dries out completely.

Daphne is supposed to be more dependable. It is an attractive little flower very white, except if I remember rightly, for a slight touch of yellow at the base of the petals. It is not so

double as alba plena odorata and is smaller and slighter in its whole effect.

A neighbor brought me four flowers from one clump that showed doubling in an interesting way. One had two poeticus crowns set one upon the other, and a few extra segments in the perianth. Two had the two crowns and extra segments from the center grew in different arrangements, petaloid parts. In the fourth, one crown was still visible, but the flower approached alba plena odorata much more nearly in the number of perianth segments.

RACHEL CAUGHEY,
Antrim, N. H.

Postscript from the Tulsa Exhibit

An arrangement of Lovenest and *Prunus pissardii* in an upright Chinese (brown) bronze container.

An arrangement of masses of Orange Queen and the foliage of barberry and *Photinia serrulata* in an oblong copper container.

An arrangement of White Lady and own foliage to imitate a clump in a green Celadon container.

An arrangement of *gracilis* var. *tenuoir* with own foliage in white Peking glass.

A crescent shaped arrangement of wild currant, St. Egwin and a few yellow incomps with red rims to emphasize the red rims of the currant blossoms in a pale green, gondola shaped container.

An arrangement of forsythia bending sharply to the right with masses of Jonquilla simplex to the left and above in an oval aquamarine bowl. The material was combined because of the similarity of shape of the daffodil blooms and forsythia blooms. The design was suggested by a garden scene near a small forsythia during a high wind.

Arching stems of *Spirea prunifolia* var. *flore plena* combined with snowflakes, an unknown white tazetta and green and white foliage of a saxifrage in an oval white container.

An arrangement of peach colored flowering quince and white daffodils in a flat grey bowl with a peach lining.

An arrangement of white daffodils suitable for a dining room table in a diamond shaped container with a green lining.

An arrangement of purple and green Lenten roses with foliage of *Euonymus japonica* in a purple container.

An arrangement of *Tulipa clusiana* and red bud in a pale green container.

ELEANOR HILL.

Daffodils in Virginia

Among the pleasant recollections of my childhood is one of gay daffodils against an old gray fence with lilacs nearby. That was perhaps why, when there was a chance for a garden of my own, it was planned with a narrow border just for daffodils against a split-rail hickory fence with lilacs, purple and white in the background.

My first treasures planted there were the old varieties given by friends from their gardens or gotten from deserted places, the double Von Sion, Butter and Eggs, Codlins and Cream, alba plena odorata, Early Virginia, the white Swan's Neck, an unknown Incomparabilis, the Poet's narcissus, a creamy flowered Tazetta, Campernelle and *biflorus*. All of these with the exception of the Tazetta and alba plena odorata, which has never bloomed, liked their new home and they or their offspring have bloomed there for twenty-five years. It is true that in some years, this being one, they have shown a tendency to sulk, quarters having become too crowded or perhaps food too scanty, and bloom was scattering.

Our home is in the woods so in or-

Robert L. Taylor

Narcissus, Mary Copeland

[*See page* 384]

der to get the sun, we made the garden on its edge, open to the East and South. The trees on the other side are twenty-five yards away and branched high. The four middle beds of the garden, 18 by 30 feet each, are planted with mixed

perennials and annuals and here, as they were added, the newer varieties of narcissus were placed, just back of the edging of thyme, verbena, pinks and nepeta. At planting time phosphate was worked into the soil under the bulbs and another application given after the blooming season. In addition they got the benefit of a rich compost twice a year.

The iris did not seem to like such mixed company. They tried to monopolize the borders and another spot had to be found for them. Outside the garden, on the west nearer the house the woods are rather open with only a few large trees and some dogwoods and gradually the overflow iris were planted there where they and I fancied they could have undisputed possession.

Of course daffodils increase also and soon they, too, needed a new place. A few were planted among the iris as I told myself consolingly, 'the foliage will die before the iris bloom.' It did no such thing, but during the past season nowhere was the bloom of narcissus so profuse or the cups so brilliant. There, in addition to the phosphate, ground limestone is scattered every few years and wood ashes each spring. Now more bulbs have been dug in back of an edging of blue and white *Iris tectorum* under whose drooping leaves their dying foliage can be hidden.

The Poet's narcissus and some others, notably White Nile, Mystic, Silver Salver and John Evelyn had not done well in the 'sunny garden' and they along with Mrs. Backhouse, Beersheba, in fact all the white trumpets, were moved to a semi-shaded border that edges a grass plot on the west side of the house. With the exception of Evelyn who likes nothing done for him, and though increasing refuses to bloom, all did well.

Again when moving day came around, the poeticus and tazetta were transferred to the wild flower section in the woods outside the grass plot where under mountain laurel and other native shrubs they have shown greater increase than ever before.

Hereafter, since I cannot bring myself to throw away a bulb, the increase will have to go there, and it will be a case of the survival of the fittest in the shade. Yet, perhaps not. It may be that until the end of time I shall be ever searching for just the spot that each variety likes best, knowing that the effort required will be but a small price to pay for the joy their spring sunniness gives.

GRACE LEAR YOUNG.

Hebron, Va.

Narcissus, Mary Copeland (See page 383)

From the beginning of gardening, it is probable that there have been two schools of thought in regard to double flowers. By the mere process of eavesdropping, one is often able to catch an opinion that might not have been given in answer to a direct question. In daffodil shows, therefore, the editor has listened in on the fulminations of those who are against doubles as well as the arguments of those who like them. The delicate line of preference seems to be as to whether the essential form of the flower is destroyed or not and even those who admit a liking for doubles seem to prefer the variety in which the basic pattern is not lost.

For all such one may recommend Mary Copeland, which has an almost camellia-like form. For purest coloring in the vestiges of the cup, one must have sufficient moisture and a slow season. The blooming period is late.

Lily Notes

G. L. SLATE, *Editor*

*The Protection of Lilies Against Damping Off**

Damping-off of lily seedlings is often severe, the disease sometimes killing most of them if no attempt is made to protect them. George L. Slate in his "Lilies for American Gardens" suggests that the surface of the soil be well dusted with copper carbonate before seedlings emerge or about two weeks after seeding. He is speaking, of course, of those species which germinate promptly and send up a cotyledon soon followed by a true leaf.

But copper carbonate is known to be less effective against damping-off caused by the fungus Rhizoctonia than by that caused by Pythium and but little use is now made of copper carbonate for the similar protection of other plants. They are more often protected by seed or soil treatments with other fungicides, including some relatively new organic materials. Examples of such are Phygon (2, 3-dichloro 1, 4-naphthoquinone), Spergon (tetrachloro-parabenzoquinone), Fermate (ferric dimethyldithiocarbamate), Thiosen and Arasen (tetramethylthiuram-disulfide, with and without a wetting agent).

The writer has recently compared some old and new methods, using the regal lily, *Lilium regale* E. H. Wilson, as a test plant. Seeds if treated were sown in untreated soil, a sandy loam, and untreated seeds were sown in treated soil. Seeds were sown in a greenhouse in early January.

Post emergence damping-off was not severe, pre-emergence damping-off, being more important under the prevailing conditions. Results are expressed as relative numbers of plants which lived, the same numbers of seeds having been sown with all treatments.

Final stands were more improved by certain seed treatments than by any soil treatment. Best results were given by seed treatment with Thiosan, Semesan and Arasan, with the numbers of plants which lived increased as, compared to the check, by 37, 25 and 22 per cent respectively. None of these treatments retarded growth, and green weights per plant four months after seeding were greater by 8 or 13 per cent with Thiosan or Arasan than in the check.

Seed treatments with Fermate, Spergon, Phygon, Phygon-talc (1:1) and red copper oxide were all less effective or failed to improve stands and plants grown from seeds treated with Phygon and red copper oxide were smaller, weighed less by 44 or 55 per cent, than those in the check.

Treated seeds carried as much of the fungicide as would adhere after they had been shaken in a covered jar with the chemical, the excess of the latter being then removed by screening. Some of the fungicides may thus have been applied too heavily and to the detriment of germination or growth. But the indications were all in favor of Thiosan, Arasan or Semesan, especially the two former, applied in this way to seeds.

Soil treatments, the chemicals worked into soil just before seeding, included potassium dichromate 0.4 gm. (per square foot in all cases), sodium nitrite 3.0 gm., salicylic acid 7.0 gm. and

*Massachusetts Agricultural Experiment Station Contribution No. 606.

Fermate 0.8 gm. Other treatments compared were formaldehyde one teaspoonful per gallon of water, one quart per square foot, or vinegar 215 cc. in one quart of water per square foot of soil applied immediately after seeding.

None of these soil treatments resulted in improved stands of seedlings and vinegar, potassium dichromate and salicylic acid had an unfavorable effect on germination or subsequent growth. Fermate was no more effective than it was as a seed treatment. Green weights were increased 30 per cent by formaldehyde but numbers of plants which lived were not affected. Copper carbonate applied to the soil two weeks after seeding failed to improve stands, probably partly because that is too late to prevent all pre-emergence damping-off. Growth of plants was improved by sodium nitrite but 15 per cent fewer plants lived with it than without it.

In one case, using the method of Dunlap (Conn. Agr. Expt. Sta. Bul. 380), seeds were sowed in sand which had been washed with hot water. Potassium nitrate, 2.5 gm. in one pint of water per square foot, was applied to it immediately after seeding. Final stands were less good than those obtained with treated seeds sown in soil and the seedlings, remaining too long in the sand, were much small than those in soil.

Seeds were also sowed on a one-inch layer of screened sphagnum moss over a foundation of soil, a method suggested by Stoutmeyer and co-workers (U.S.D.A. Leaflet No. 243). An application of potassium nitrate and superphosphate, one teaspoonful of each in one gallon of water, was made immediately after seeding. Numbers of plants which lived were no greater than in the check. But this method resulted in the largest plants, green weights per plant four months after seeding being 67 per cent greater than in soil without sphagnum and without added nutrients.

It is possible that quite different results would have been obtained had the writer used seeds of a species such as *Lilium auratum*, the seedlings of which make no above-ground growth until the second spring. But the indications were that to prevent damping-off of species such as *L. regale* which make leaf growth the first season, seeds should be treated with Thiosan or Arasan, i.e., tetramethylthiuramdisulfide.

CORRECTION: LILIES FROM SEED

In the January 1946 issue of the magazine, on page 73, there was omitted one entire line from Dr. Slate's article. If you will be good enough to insert in the left hand column, after the word *soil* in the 30th line from the top of the page the following: "Mice sometimes raid the flats and destroy many bulbs during the winter."

Cactus and Succulents

W. Taylor Marshall, *Editor*

My Stay-at-Home Friends

In the last fifteen years about 1,200 friends have visited me and of these 1,100 liked my home so well that they stayed with me and I can visit with them daily. Others did not like the climate of Los Angeles and departed but they are still at home in Arizona, Mexico, Central and South America and the West Indies and I can visit them in their homes to renew old acquaintance.

Just about this time each year the urge to visit these friends returns and this year I decided to spend some time with my stay-at-home friends in Arizona. My trip covered the north rim of the Grand Canyon, the Hopi, and Laguna Indian villages, the Painted Desert, the Navajo country, the Petrified Forest, White Mountains and Salt River Canyon and Valley.

The first "stay-at-home" I encountered was *Echinocereus mojavensis* Eng. who had donned a vivid cloak of bright red flowers for my visit. This small cactus is found on the Mojave and Colorado Deserts of California and in northern Arizona where it merges into *Echinocereus coccineus,* which differs from the first species only in its more numerous heads and more contorted spines, and finally in the Petrified Forest into *Echinocereus triglochidiatus* Eng. which there exactly resembles the first two except that it lacks a central spine. Flowers on all species are identical.

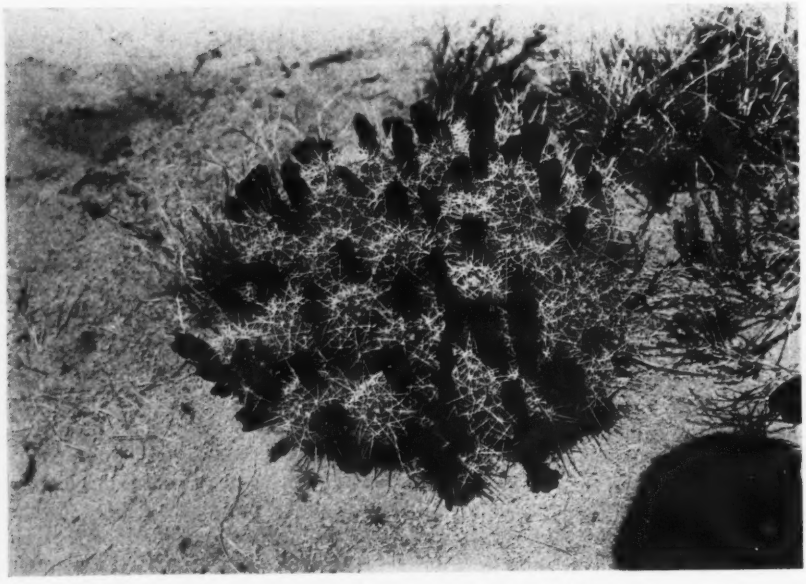
These species, or rather this variable species, is most attractive as seen in its dry habitat but does not take kindly to cultivation. It is possible that its theme song may be "Don't fence me in." It, and the other species mentioned in this article are to be enjoyed only in their habitats, well repaying a visit but intolerant of transplanting.

Ferocactus Wislizenii, one of the barrel cacti, next attracts our attention. At home in Arizona, New Mexico, Texas and northern Mexico it is an outstanding feature of the desert lands it inhabits, providing the traveller with his direction and, in dire emergency with water; direction because the head of the plant inclines to the southwest and water, speaking loosely, because when the top on the plant is removed, and the pulp crushed a quantity of saline, mucilaginous, not too palatable juice is obtained which is capable of sustaining life in emergencies.

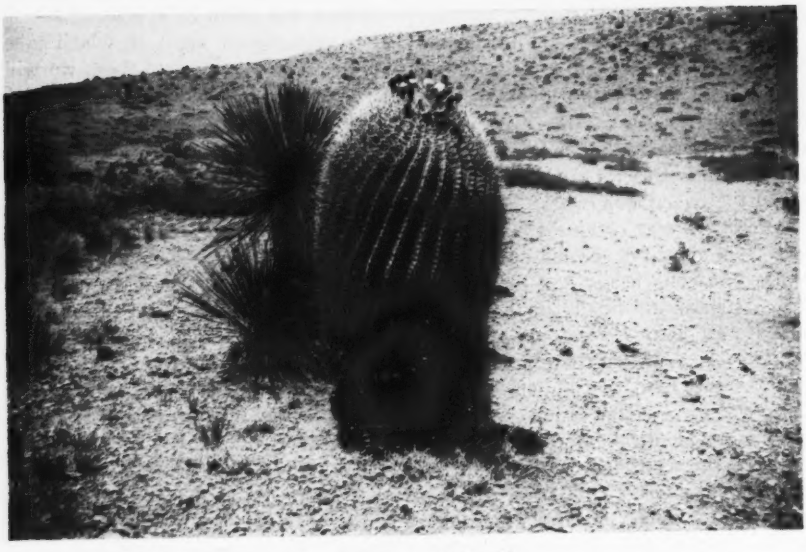
There are about 25 species of barrel cacti only six or eight of which take kindly to cultivation and these we will discuss in a later article. It can be assumed that plants from a strictly desert region will not reestablish in a garden though sometimes they will live without rerooting, on stored food, for from three to five years.

The Giant Cactus, *Carnegiea gigantea* (Eng.) B. & R., is another plant to be visited in its home but unsuited to cultivation. Seedlings, nursery grown, do as well as can be expected of a plant that attains maturity in two hundred years but few of us will live to see our seedling flower.

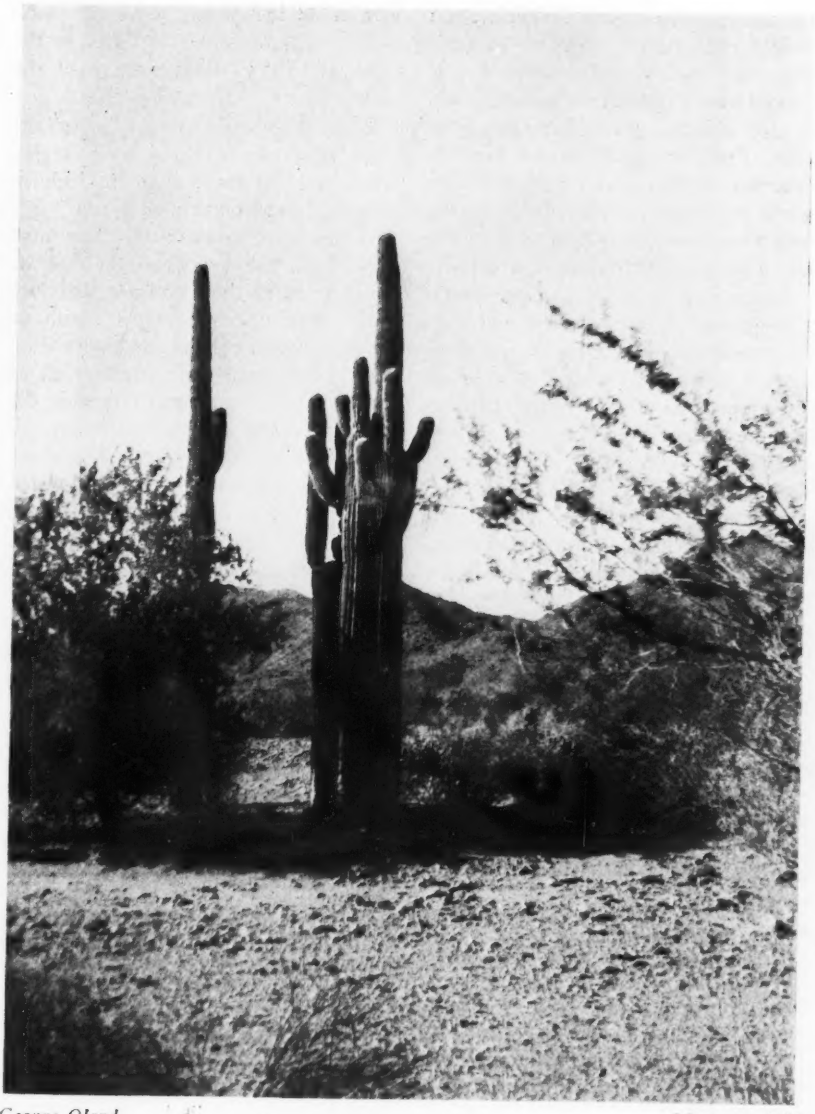
The Indian name for the giant cactus is saguaro and under this name it is known in Arizona where it is the state flower. So important is the saguaro to the Indians that their year begins at



Echinocereus mojavensis var. triglochidiatus



Ferocactus Wislizenii



George Oland

Carnegiea gigantea

[*See page* 387]

the fruiting season, when a celebration is held after the gathering of the crop. The juicy red fruits are eaten raw or cooked into a preserve which is stored in clay vessels for use throughout the year. From this syrup an intoxicating beverage is also made, and even the seeds are dried and saved for winter use, when they are ground on a metate into a paste from which cakes are made.

Although a large saguaro may attain a height of forty or fifty feet and with its branches weigh six to seven tons or more it is not deep rooted but depends for support on surface roots radiating like the spokes of a wheel for fifty to sixty feet in every direction. The massive stems are composed of watery tissue, braced by a framework of rods parallel to each other and united at intervals into a hollow circle. After a plant dies these rods remain and they are used by the Papago Indians in the construction of their houses. Desert woodpeckers hollow homes in the soft flesh of the stems but the plant walls off the cavity with scar tissue which hardens and forms shoe-shaped nests which are later preempted by owls and other birds.

Botanists studying the growth of the saguaro have found that only those seeds which germinate in the protection of shrubs survive and that for the first two years the growth in nature is about ¼ inch, in 8 to 10 years the young plant attains a size of four inches and attains to three feet in thirty years. It first begins to branch at 15 feet and from then on the maximum growth is 4 inches a year.

Saguaros are bold and outstanding but our next "stay-at-home" is most retiring, and can seldom be found when not in flower. *Peniocereus Greggii* (Eng.) B.&R. has a very large root tuber which sometimes attains a diameter of 22 inches and a weight of 60 to 125 pounds and this tuber is the principal water storage organ of the plant.

From the underground tuber the plant sends up weak, 4 to 5 angled stems, seldom more than an inch in diameter but sometimes 9 feet high. The stems are so weak that they must depend on the support of a tree or shrub to carry them and are therefore found only under a desert shrub or tree. In Arizona the plants flower from June 12 to June 16th, usually all of the plants in one district flowering the same night and it is then that they can be located by the strong perfume of the large, night-blooming, white flowers.

A few instances have been recorded of a small tuber that has been reestablished in cultivation but most of the plants removed from their desert home die within a short time after removal. *Peniocereus Greggii* is, therefore, a plant to be visited in its home and not one for home cultivation.

Arizona has wisely enacted a law prohibiting the removal of any desert plant except under permit and permits are granted for collection of plants for scientific purposes with a restriction that plants so collected must not be taken within a reasonable distance of the highways and that certain species which are becoming rare can never be collected. The law goes further and prohibits the transportation of desert plants except under permit as above noted.

If you would meet these friends of mine you must come to their homes to visit them as I do at frequent intervals. If you cultivate their acquaintance under their home conditions you will appreciate them the more and be assured that a desert visit is good for the soul.

W. Taylor Marshall.

George Oland [*See page* 390]

Peniocereus Greggii

Colletia cruciata Gill and Hooker

Recent inquiries have been received from widely separated parts of the United States about the method of propagation to be used for *Colletia cruciata*. Sometimes such inquiries re-

fer to the plant now under its proper name, sometimes it is called *Colletia horrida* Hort. and again it is spoken of as the "Crucifixion Thorn."

It is a branching shrub or small tree in California, reaching a height of eight to ten feet, although it is reported not to exceed four feet in its native Uruguay, gray green in color the branches flattened and bearing large, triangular spines and a few, small, elliptic leaves. The small white flowers are borne on short pedicils at the base of the spines and are followed by three-lobed, three-celled, capsular fruit. Seedlings are bright green and resemble a small cypress.

Colletia is a member of the very interesting Buckthorn family (Rhamnaceae) which is well represented in the United States where several species of the genus Rhamnus are valued as ornamentals and one species, *Rhamnus Purshiana* DC., produces Cascara sagrada bark used extensively in drug manufacture while an Asiatic species *Zizyphus jujuba* Lam. produces the flavoring jujube. *Colletia,* however, is a tropical genus and its species require glass house care except in the sub-tropical districts of Florida, Texas and California.

Colletia cruciata can best be propagated from seeds although special methods are advisable because the seedlings grow a long, thread-like tap root, which is easily broken in transplanting and, if broken the plant will not survive. We usually plant our seeds in small pots, one or two to a pot, which can be broken for the removal of the seedling for transplanting or, better yet, in #1 tins or soup cans which can be planted with the seedlings and allowed to rust away in the ground.

Not to exceed 5% of cuttings have been rooted when attempted in base heated beds but none have rooted without bottom heat.

The illustration shows a portion of a plant in the garden of Phil Daubner of Los Angeles from which seeds and seedlings have been generously distributed for a number of years and this plant is the source of all *Colletia cruciata* in western collections as far as I know.

The use of the name crucifixion thorn as applied to *Colletia cruciata* is manifestly inaccurate as this Uruguayan plant was unknown in Asia or Europe till the sixteenth century. The true crucifixion thorn is a member of the Rhamnaceae although it is not certainly known if Zizyphus Spina-Christi or Paliurus Spina-Christi was the exact species.

W. Taylor Marshall.

Epiphyllum crenatum (Lindley) G. Don.

In the April issue W. Taylor Marshall indicated the great variety of Orchid Cacti now available and showed that these forms were produced by crossing a species in the sub-tribe Epiphyllanae with other species in the Cactaceae. In some ways the Epiphyllanae are dominant, particularly in form, so that the whole group of Orchid Cacti has the flattened, leaf-like stems inherited from them, rather than from the other species of Cacti which have been used in breeding. Three species within the Epiphyllanae have largely contributed the main characteristics, if not the great diversity, of the group: *Nopalxochia phyllanthoides* (The German Empress), *Nopalxochia Ackermannii* and *Epiphyllum crenatum.*

Numerous hybrids show symptoms of having *E. crenatum* as one of their parents and a detailed description of this species is, therefore, of general interest to the collector of Orchid Cacti. In addition *E. crenatum* is a beautiful plant with a character all its own, and

Scott Hazelton [*See page* 391]

Colletia cruciata

well adapted to greenhouse or living room culture.

T. Mac Dougall (Cactus and Succulent Journal, p. 149, 1945) described some Mexican species of *Epiphyllum* and wrote: "*E. crenatum* is another species that seems to appear in most lists. It is rather widely spread in

Figs. 1 and 2. Flower of Epiphyllum crenatum (Lindley) G. Don. Side view of flower showing long tube and cup-shaped limb.

somewhat scattered groups, on higher altitudes of Oaxaca and Chiapas. These show much variation and perhaps consist of several closely related species. In any case systematic study is needed." This variation will probably prove still greater when types from other areas like Guatemala and the type locality, Honduras are included in the study.

The species has been in cultivation for a long time (it was first described by Lindley in 1844), and we do not know how often new, wild plants were introduced nor of what types the introductions included. The fact is that most plants in cultivation under the name of *E. crenatum* do not conform in every detail to the original botanical descriptions. The most concise of these descriptions is probably the one of Britton and Rose in Cactaceae IV. 1923 which follows:

Old stems woody and terete, branches glaucous, often rooting at the tips, rather stiff, 2-3 cm. broad, obtuse, erect at least at first, with large, deep crenations, cuneate at base, the midrib thick; areoles at base of stem and branches often bearing hairs or small bristles; flowers very fragrant, rather large, limb 10-12 cm. broad, cream colored to greenish yellow, tube 10-12 cm. long, slender, bearing linear scales 2-3 cm. long; inner perianth segments oblanceolate, 6 cm. long; filaments yellow; stamens white; stigma lobes narrow, ovary scaly, some of the scales 2 cm. long, spreading."

To this description Berger in Kakteen 104. 1929, added the following points, quoted in translation from the Epiphyllum Handbook, Haselton 1946: "notches below areoles are rounded, — tube reddish toward top, outer perianth segments broad lineas, greenish-yellow; inner ones spatulate, white or cream colored: — style and 8 lobed stigma white." Berger calls the color of the joints "gray-green" which is not exactly in agreement with Britton and Rose's "Glaucous" but the color of cactus plants is so variable that it is doubtful if it should be mentioned at all in formal descriptions, except in special cases.

The plant in my possession, from which the accompanying photographs

Fig. 3. Flower after withering.

were taken, is, without doubt, *Epiphyllum crenatum* as determined by the shape of its joints and by the color, size and structure of its flowers, yet this plant differs in some important characteristics from the two classical descriptions cited. The scales on the tube do not reach more than 2 cm. (B. & R. 2-3 cm.); on the ovary they do not exceed 0.6 cm. (B. & R. 2 cm.); the joints are 3-4 cm. broad (B. & R. 2-3 cm.), these measurements were made from areole to areole and, therefore, do not give the maximum width; no bristles or hairs are found in the areoles; 9 to 10 stigma lobes are found instead of 8 as noted by Berger. Additional characteristics, which may well be added to clear the way for a more systematic study of the species, are: The plant branches according to a fairly definite pattern, each branch produces one side branch from one of its lowest areoles, usually away from the center of the plant and this side branch produces another side branch in the same manner; joints of triangular cross-section are rare but do occur; the flowers require 7 to 8 weeks to develop from the time the tiny green buds appear in the areoles and then open at dusk and remain open for about two days; in the east the plant blooms in April but in California it is reported to be a late summer bloomer.

A characteristic of the flower which is rarely mentioned is the shape of the inner petals which are often pointed, because the ends are slightly pinched as can be noted in the photograph, a feature that is often inherited by its hybrids. Another feature is the slow development of the fruit. If the flower is pollinated, the ovary remains in the condition shown on page 395 for more than a month before it swells and grows. This is in definite contrast to other species, for instance *Nopalxochia phyllanthoides*, in which the ovary begins to grow immediately after the wilting of the flower. For still more details of the flower the pictures may be consulted. It is hoped that they may stimulate other castus and plant lovers to acquire a specimen of this Epiphyllum, which is easily raised and of fine beauty.

E. C. Roosen-Runge, M.D.

Our Garden

About 1927 my wife and I arrived in Southern California from Oregon and, like all newcomers to this State of sunshine and flowers, we spent most of our time for the next several years travelling throughout the Southland. Naturally on our trips we came in contact with the desert and thus came to know cactus at close hand. These strange desert plants and their exotic flowers intrigued both my wife and

myself and soon we had collected and bought some of these plants and started a small cactus garden.

In the next two or three years our garden grew to forty or more species. In 1935 we bought a home and the first thing we did was to move our plants and start a larger cactus garden at the new home. During this year we became acquainted with one or two nurseries which specialized in succulent plants and our collection commenced to grow, a growth which has continued for the intervening years until at present we have increased our collection until more than half of our yard has been taken into our cactus garden.

The soil of our new home was not very good so we decided to do something about it, we brought in rocks and after building walls from six to twelve inches high around the different beds, we bought good garden soil to fill them and in this way we attained good drainage and a soil that dried out readily.

In the process of building up our garden we discovered that many of our plants did not enjoy the full sunlight, of which we have a great deal, so we built a small lath house, this was followed by a glasshouse eight by eighteen feet in size.

Since the building of the first lath house we have found it advantageous to put in more lath until about half of our garden is so covered. All this building was work, but it never seemed to bother my wife or me as there was always something new either in plant or flower, to keep our original interest on the increase and we find that, though the building program seems to have finally reached completion, we can always find enough study or work in our garden to keep alive our intense interest in succulent plants.

H. G. RUSH.

Editor's note.

Generosity has always been the outstanding virtue of the true cactophile and the Rushes live up to the best traditions and cuttings and plants from their garden are to be found in many private gardens throughout the United States. In their case the collections they have made of special genera in the Cactaceae and Crassulaceae have been so thoroughly done that the representation includes many species not found in other collections, therefore they have been able and glad to contribute specimens to many of the botanists in xerophytic plants at several of our universities, thereby materially assisting the work of those botanists.

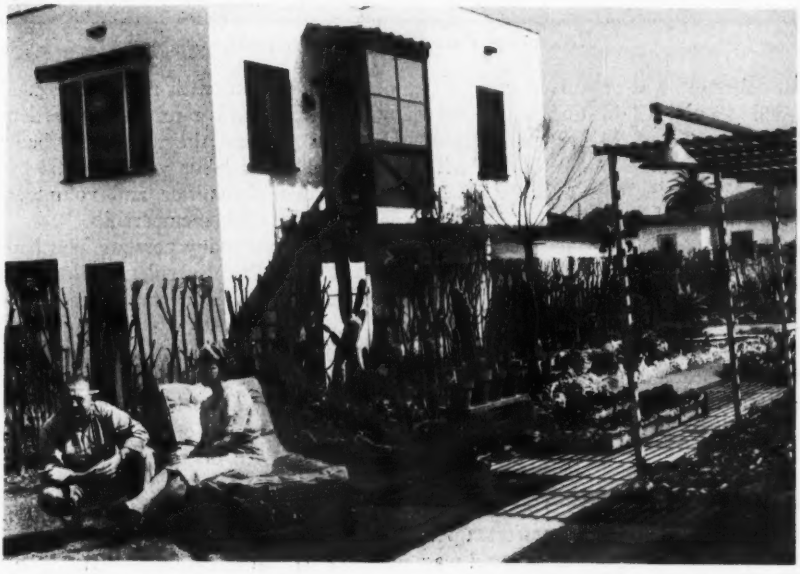
For this reason I felt that a story of their garden would prove interesting and instructive and I asked Homer to prepare an article for me. The result, which is here presented is notable only in what it does not say. Homer Rush has specialized in the genera Rhipsalis and Gymnocalycium in the Cactaceae and has acquired outstanding collections of both genera. He is president of the Los Angeles Cactus and Succulent Society, a group of students who meet monthly to study the morphology and taxonomy of succulent plants. He is also a member of the Executive Board of the Cactus and Succulent Society of America.

Ethel Rush is a collector of the Sedoideae and plants from her collection have been described in the works of several botanists. She is the Recording Secretary of The Cactus and Succulent Society of America and a gracious hostess to the numerous cactus clubs of Southern California, one or more of which meet at her home each month.

Recreation Park, Long Beach, Calif.

In March of 1933 an interested group of amateur Cactus and Succu-

Homer Rush inspects the bed of Canary Island Aeoniums.



Homer and Ethel at the entrance to the cactus garden. Since the picture was taken the hedge in the background has been replaced by a sightly wire fence.

Recreation Park, Long Beach, Calif.

lent collectors was organized, the Long Beach Cactus Club, under the very able direction of Mr. Jack Kleinke. President Kleinke was endowed with one idea, that the City of Long Beach should have in one of their Parks a representative Cactus Garden. Following his suggestions the Long Beach Cactus Club decided to attempt to build such a specimen garden. A number of locations were considered but the site chosen was Recreation Park, in a plot made available by the Long Beach Park Department.

This part of the Park at that time was overgrown with weeds and the adobe ground was at least as hard as granite but this had no effect upon this ambitious group. The ground was broken with a team and plow and a large mound was built at one end of the proposed garden, with ample drainage built in and then the rest of the garden was laid out and the walks and beds were built, this labor was all done by the Garden Committee and volunteer labor of the Club membership.

By this time many persons who had Cactus and other Succulent collections had heard of this undertaking and, like all true enthusiasts, gave many fine plants to the Garden. Many of the donations were collected plants and some of them quite large. A number of large plants of Cereus took days to move into place because of their size.

At this time two years had elapsed and the Specimen Garden was beginning to take shape and the Club had elected as their President Mr. J. F. Kaufman, who had always been an active advocate of the Garden, and with

renewed vigor the work went ahead for the next year under his direction.

There was always work to be done and plants to pick up from donors but it seemed that there was always someone with time to spare who was willing and anxious to do the job. One large donation of Aloes and Yuccas was made by the Huntington Botanical Gardens through the kindness of its Director, Mr. William Hertrich, and Mr. Yale Dawson donated many of the plants which he collected in Lower California, including many large specimens.

By the end of Mr. Kaufman's term as President the Garden was well along towards completion and Mr. "Andy" Anderson took over the Presidency. Under his direction the finishing touches of planting was brought to a climax and by the end of his second term, was practically complete except for a base upon which a bronze plaque was to be mounted. This base is a fine specimen of the stonemasons art, built of specimens of rocks and minerals collected by some of the members, who were also minerologists.

The final scene in this story was enacted at 2.00 P. M., June 12th, 1938, at which time the Officers and the Board of Directors of the Long Beach Cactus Club officially turned the Specimen Garden over to a group of City Officials representing the City of Long Beach. At this time the dedicatory plaque was unveiled and the Garden became the property of the City to be maintained permanently as a feature of the Park.

Since the war's finish there is again some activity in the Cactus Club with a program being outlined to add a large new section to the Specimen Garden which will feature particularly the other Succulents.

This may sound like a fairly simple feat to some of you but for an organization which has seldom had a membership of over forty it has been really some job and the Club may well be proud of its accomplishments.

HOMER RUSH.

Succulents in Cincinnati

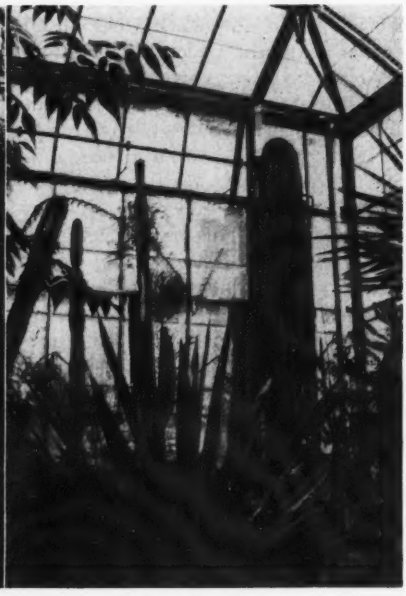
Irwin M. Krohn has made a hobby of his job as President of the Cincinnati Park Board and is keenly aware of the trend of popularity in plant life. It is, therefore, understandable that in 1938 he realized the growing popularity of Succulent Plants and planned a suitable house in which these interesting specimens could be grown for the admiration of plant lovers in southern Ohio's metropolis.

At that time the conservatory in Eden Park consisted of a foyer, a palm house extending eastward, a fern house as a northern extension and the show room, extending southward. In this show room the Cactus Show in connection with the Second Biennial Convention of the Cactus and Succulent Society of America will be held on June 28, 1947. A new extension, 45 by 75 feet with a center height of 25 feet, was built to be known as the "Cactus House."

The new wing was completed and dedicated on November 4th, 1939 with Lad. Cutak of the Missouri Botanical Garden as the principal speaker. Several hundred specimens of Cacti and the other succulents had been assembled from all over the world and planted in an artistic setting. For the benefit of students the plants are catalogued and numbered and a 32-page Catalogue Guide was printed.

A kidney-shaped island in the center of the house has a specimen of *Echinocactus Grusoni* Hildm. as the focal point as illustrated on page 401. Opposite this is a mound of tufa rock in which Mammillarias and other cacti and succulents are planted in natural

Opuntias and Aloes



Carnegiea gigantea

positions, then a section devoted to large Opuntias and Aloes with lower growing turks caps and barrel cacti below them (page 400). To the left, on the island tall Cerei and Yuccas accent the planting (page 401).

At the east end of the house a twelve foot *Carnegiea gigantea* (Engelm.) B. & R. the Arizona giant cactus is surrounded by plants of *Nyctocereus serpentinus* Lac. & Rod., the Queen of the Night, Pereskias, the leafy forms of cactus, Agaves, Yuccas and smaller specimens of Echinocerei.

The east end of the island features *Opuntia brasiliensis* (Willd.) Haw. and plants of Echinopsis and Echinopsis hybrids.

Beyond this three large plate glass windows permit a view of the orchid room where the orchids share honors with Bromeliads and the epiphytic cacti. Flowering plants are displayed in these windows and so wide is the flowering range of the epiphytes that flowers of some type are always available.

Passing the display windows we come to a showing of Euphorbias which are to the African deserts what cacti are to the American deserts. These spurges have assumed almost all of the familiar cactoid forms but lack the large, colorful flowers of their American cousins.

Beyond an entrance to the propagating room Sedums, Aloes, Stapeliads and other succulents occupy the remaining space as illustrated on page 401, looking back on the north walk.

The Kentucky, Indiana, Ohio Cactus Club take great pride in the Cactus House in the Irwin H. Krohn Conservatory in Eden Park in which they had a share as consultants of the Park Board and invite visitors to Cincinnati to share with them the thrill of viewing its outstanding collection of succulent plants.

C. R. Cole.

Cincinnati, Ohio.

Specimen of Echinocastus Grusoni.

Cerei and Yuccas.

Aloes Stapeliads

The Irwin H. Krohn Conservatory, Eden Park, Cincinnati, Ohio

A Book or Two

Minor Elements. Edited by Firman E. Bear and Herminie B. Kitchen. The Williams and Wilkins Company, Baltimore, Md. 189 pages. $2.00.

This book is reprinted from the July and August (1945) issues of *Soil Science.* It presents a symposium as to evidence and concepts on functions, deficiencies, and excesses of the so-called minor elements in plant and animal nutrition. The 21 papers were prepared by recognized specialists and are to be regarded as authoritative and the most up-to-date summary available.

The minor elements considered, include not only boron, manganese, zinc and copper but also aluminum, chlorine, cobalt, nickel, fluorine, iron, magnesium, molybdenum, selenium, silicon, sodium and sulfur. An interesting chapter discusses the occurrence of mineral nutritional diseases of plants and animals in the United States. The role of plants as accumulators of minor elements is described in another and is the basis for the recent use of selenium in the control of certain insect pests.

It should be emphasized that the book is not a manual for the identification of minor element deficiency or toxicity symptoms nor are recommendations made as to their use. Intended as a summary of critical research the book is probably somewhat too technical for the average reader.

NEIL W. STUART.

The Rhododendron Yearbook for 1946. Published by the American Rhododendron Society at Portland, Oregon, for its members. 176 pages, illustrated.

The first 56 pages are devoted to text, the balance is a copy of the Rhododendron Species List published by The Rhododendron Association of Great Britain. This list gives what is supposed to be the scientific name (no authority cited), a suggested translation of the specific name, the symbol for British hardiness rating, the series (and at times subseries) to which the species belongs and a very brief and often inadequate description.

The preliminary pages are full of show doings with regular Chamber of Commerce type pictures; a large chunk of Hardgroviana; a note on top-grafting out-of-doors (in Seattle, this time); brief reports from Mr. Seevers in Kansas, Mr. Lee in the District of Columbia, two articles directed toward garden design by Messrs. Otho and Holmdahl and a briefer note on *Rhododendron occidentale.*

There was presented as well a slender bulletin, "Rhododendrons for Amateurs (price 25 cents) which should have been titled Rhododendrons for Amateurs west of the Cascades.

The Handbook of Rhododendrons. Compiled and Published by The Arboretum Foundation, Seattle, Washington. 198 pages. $5.00.

This presumably is a publication for the clientele of The Arboretum Foundation for there is nothing in the introduction that suggests that any other audience was intended. It is made up generally of "a compilation, a bringing together, with slight revision of some of the key articles by a number of authorities which have appeared in the Arboretum Bulletin over the past several years. Other important titles have been deliberately sought in order to round out the subject matter." No Easterner, therefore, has any reason for complaint, except that some of the "important titles" are somewhat inadequate.

One wonders too, if by now the British aren't pretty weary of being copied and recopied. Their list of synonyms is not much account since no authority

is given, either for the invalid name or for the proper one.

The total lack of illustrations is the most lamentable factor, because it is a little difficult to believe that everyone of the 700 purchasers of the first edition will know what all the material looks like.

Auratums for Amateur Gardeners. Alwyne and Ralph Buckley. Privately printed, Esperanza Lily Gardens, Langley Prairie, British Columbia. 24 pages, illustrated. $1.00.

This is a very practical bulletin written by the people who have been solely concerned with the production of sound *auratum* bulbs and who have found the way to do it for themselves and want you to know as well. A longer and more detailed version is promised later. Meantime, it will be to the advantage of growers and would-be growers of the Gold Banded Lily, here called the Golden Rayed lily, which is much more poetic, to get this booklet and learn the basic principles that have been put into it according to the experiences of the growers.

Old Salem Gardens. Published by the Salem Garden Club, Salem, Mass. 72 pages, illustrated with drawings.

At the 10th Anniversary Meeting of the Garden Club, in January 1938, papers were read about Old Salem Gardens and from that felicitous idea and happy occasion grew the material that is now incorporated in the present booklet. The reviewer likes the idea and the result, for even he can recall, when there were old gardens here where now one finds progress in the form of routine grass plots and second-rate evergreens. Salem itself is a word to evoke recollections and it seems very happy that the garden club should have managed a book in which historical accuracy does not dim enthusiasm nor romantic flights weary the reader who perchance does not believe in romance. In addition to the descriptive notes there are plant material lists and an excellent index.

Succulent Plants. W. Taylor Marshall. Photography by Rupert Leach. Sawyer's Portland, Oregon, 1945. 114 pages, illustrated and accompanied by 20 Kodachrome reels. Price of book, 20 reels and View-Master $11.50; without the last item $10.00.

As all our readers now know, there could be no better choice than our special editor, Mr. Marshall, to write the text, and he has had splendid collaborators in furnishing material to be photographed.

The book begins with an Index to the View-Master Illustrations, of which more later. There follow sections which cover in a brief fashion the important points that anyone should know in setting out to cultivate cacti and other succulents. Then comes the main body of the book in which are discussed the Plant Orders which provide the plants discussed under "Succulents" which term, of course, includes the cacti. It is good reading. Moreover it is helpful in that it gives the beginner suggestions as to which plants to try first with succinct directions for their culture. There is a good bibliography and a fine index.

The Kodachrome slides that come with the book are stunning. One feels the urge to set out at once toward a new hobby, but perhaps also to move to the southwest where sun and shadow add to beauty in a way that is not found elsewhere in this country. Buy it by all means and find yourself lost to another gardening delight.

Greenhouses. W. J. Wright. The Orange Judd Publishing Co., Inc., New York, 1946. 269 pages, illustrated. $2.50.

The sub-title of this work, now in its

3rd edition reads, Their Construction and Equipment.

It is a concise, practical treatise which leaves nothing to the imagination. It is simply written, so that the layman will have no excuse for misunderstanding, if he really reads it. The first paragraph of chapter one, states the field. "The purpose is . . . to present such information regarding the location, adaptation, erection and equipment of greenhouses as will enable the reader to decide upon the structure best suited to his needs, select the material needed, erect or supervise the erection, and to arrive at some conclusion as to the equipment most likely to render the service required."

Spray Chemicals and Application Equipment. J. A. McClintock and Wayne B. Fisher. The Greenlee Company, Chicago, Ill., in collaboration with The Waddell Printing Co., La Grange, Indiana, 1945. 320 pages, illustrated. $4.50 postpaid.

This book may have many virtues, but the one that seems outstanding to the reviewer is the excellent organization of the material which is presented with such clear headings and sub-headings that it would seem impossible to fall into error.

It is a book about sprays and spray equipment, using the term spray in its widest sense. It is not a book about plants, plant diseases or insects, although all of these are mentioned. It is really a compendium to teach you what is available, what each material is capable of doing and what apparatus are required. There are numerous citations of authority and/or source in the text and more references to the bibliographic list at the end of the volume.

On the dust cover, there is a list of the persons for whom it was written. The amateur horticulturist stands third. He should be everlastingly grateful for it in all its parts, not forgetting the excellent directories of maufacturers given on pages 304-310.

Chrysanthemums. How We Grow Them Out of Doors. By Members of the Portland (Ore.) Chrysanthemum Society and Others, 1946. 97 pages, illustrated. $1.50.

This is the current revised edition of a booklet that first appeared in 1942. There are fourteen contributors.

In general plan it follows the routine for any bulletin on the cultivation and use of a particular plant, but it has the great advantage over the work of a single writer in the variety of styles and diversity of approach.

The culture as outlined is that which can be given by enthusiastic and zealous amateurs who bring their work to professional level. There is no discussion of commercial production.

The advice is sound and simply presented and can be applied basically anywhere. The point of view and procedures as such will be applicable on the Atlantic seaboard only south of Norfolk, Virginia, around the Gulf and in those states far enough south to allow an economical use of late-maturing varieties and cloth shelters. There is no discussion of small-flowered chrysanthemums as they would be grown in the cold states and only large flowered types are illustrated.

The Seed Trade Industry. Edgar J. Clissold. Bellman Publishing Co., Inc., Boston, Mass., 1946. 48 pages, illustrated. $1.00.

This is one of a "Series of 75 Vocational and Professional Monographs that have become practically standard equipment wherever guidance and rehabilitation activities are conducted * * * *."

There is presented on pages 7 and 8 an "Analytical Index of Occupations"

in the Seed Industry, for which brief elaborations are given in the following pages, which are almost "job descriptions." The person who 'thinks he might like to go into the seed business' can quickly grasp the organization that makes it what it is and come to a fair decision as to whether or not he should go further in his search.

For our own readers there should come a much more lively appreciation of what lies behind the catalogues from which they order their seeds or bulbs, as well as various lists of addresses, references and the like, all of which are pertinent.

Native Trees of Florida. Erdman West and Lillian E. Arnold. University of Florida Press, Gainesville, 1946. 212 pages, illustrated. $3.75.

Do you know gumbo-limbo? Milkbark? Black Titi? Marlberry? Geigertree? Fiddlewood? You may have seen one or more of them without knowing their names if you have wintered in Florida, for they are subtropical trees that do not range north of the peninsula. Now you will be pleased to make room for this guide on your shelf of tree books, illustrated as it is with clear outline drawings and a few photographs. And more, when you go South you will want to take it along—this thin octavo, stoutly bound, lying flat in your suitcase. Three paraparagraphs, "description," "distinguishing characters," and "general account," the last chatty and undocumented, make quick comparisons easy when naming any specimen at hand. A master key, glossary, list of references, and index also increase its usefulness. The book would have been greatly improved by attention to a more compact arrangement of textual matter, running around and rearranging the figures, thus reducing the number of pages and wedding the reading matter and illustrations. Also the figures are of inequal quality. The book's chief inadequacy—and this is a personal taste—is the want of rich reading stuff, thick with facts about the backgrounds of the arresting names that the trees have acquired, the significance of their geographical distribution, and their life-history, ethnic and folklore *notabilia*. The botanical names, with more important synonyms, are given throughout. But, after all, for a tree guide "the name's the thing," and from that you can probe the references provided, extending your acquaintance with an unfamiliar treedom.

JOSEPH EWAN.

The Gardener's Pocketbook

Shrub notes from Tennessee referring to April 1946 Magazine

Spirea Billiardi, a hybrid of *S. Douglasii* × *salicifolia* is especially effective when cut back each spring and top-dressed with fertilizer. Actual cultivation is not needed as it will form dense thickets as does its close relative, *S. tomentosa* in Eastern pastures. The group varies in color from fuzzy white to deep pink spires, prefers full sun, and is most effective when massed unless fed and cut back as a specimen. Unfortunately it enjoys moisture and hence does not make a good cover for dry banks and the gradual blooming of the large panicles tends to give a period of seedy effect that is not too pleasing.

Cornus Mas which really makes a lovely big specimen shrub—almost a small tree when given the space to develop—is far showier in flower than *Benzoin aestivale* which makes a misty golden mist in its thin thicket-like growth in semi-shade. The earlier winter-flowering shrubs, both jasmine

and witch hazel, are far more affected by alternations of hot and cold and the bloom rarely as colorful as when continued cold holds them back enough to give a real burst. In habit and use both, they are sufficiently good to rate a place in tough, semi-shaded spots. In the Nashville, Tenn., zone both the cydonias and forsythias putter along from Xmas until spring and only occasionally give that gorgeous burst of color that is taken as a matter of course in New England.

Loropetalum chinense. It was in the warm winter of 1938 that I first discovered this delightful mound of white, a mound much like but more full of bloom than the usual cotoneaster. I immediately planted one near my terrace where I could enjoy its pleasant habit and almost evergreen foliage. My reward a few scattered blooms of little effect until 1946 when after continued cold it approximated the delightful picture in the April issue. As Mr. Morrison suggests, like *Neillia sinensis,* it is surprising to find that it is not touted as a novelty by some progressive nurserymen. Both are far more satisfactory than most of the hybrid philadelplus and deutzia offerings.

Kolkwitzia amabilis and *Cladrastis tinctoria* are both lovely but have only one characteristic in common to my mind, they are unpredictable in their reaction to pruning. The Beauty Bush I first planted in New England some eighteen years ago, as a novelty. After four or five years of apparently excellent growth it actually bloomed and now aspires to ten to twelve feet. That is where my trouble began as I had not foreseen such height nor its absolute refusal to clothe itself to the ground. Its arching habit is lovely in itself but even husky day lilies (not to consider lawn) refuse to thrive in its shade. Now, normally, a periodic cutting back will lower a shrub most happily or, at least, one can cut back three to four foot new growths and count on the development of many branches and a thicker head. But this is just what this Beauty Bush refuses to do. Nip a new shoot and rarely does any new leader or even low branch develop for that season. There may be new sprouts from the base or the bend of an old trunk but never in the expected spots. My 1938 plantings here in Nashville exceed in size my 1930 one in New England: they are equally lovely, equally arching, and equally unamenable to training. They withstand drought to perfection, grow like weeds and even self-sow and are so lovely that they should be used in quantity BUT no such beautifully arching shrub is good in a mass and its charming foliage has not quite the character for specimen use.

The Yellowwood or Shittamwood as it often is called here in its native Tennessee is also arbitrary. Clean trunked, clean foliaged, and beautiful in bloom I planted it in Massachusetts for high-branched shade in 1930, in fact bought a ten to twelve foot specimen with a single trunk that died and for five years I worked with the vigorous new shoots to reduce them again to a single trunk. At present the main branches V out a few feet above ground, split at the slightest provocation but otherwise make a round-headed tree which blooms occasionally with long white panicles. In Nashville, in 1938, I moved next a big native Yellowwood of clustered trunks, the smooth beech-like bark a joy among the warted trunks of hackberry and elm. Twice only has it bloomed to perfection and then so freely as to take all the strength from many of its main branches. It is slow to flower (as I found in New England) but it is also most irregular and I have hunted in vain for self-sown seedlings in the vicinity of the old tree. Inci-

dentally the hunt was not made easier by the similarity in bark and leaf of the prolific common ash in the same vicinity. In fact I transplanted some twenty hopefuls before I found the difference. This is a native, a rather rare native—of Tennessee only. It is distinctive despite the fact that it blooms with the equally drooping Black Locust in this climate but its uncertainties of habit do not permit use in important cities.

R. S. Sturtevant.

Elliottia racemosa

These few lines are intended as a postscript to a note I wrote about Elliottia racemosa and which was published with two photographs in The National Horticultural Magazine, July 1941.

There are two nice specimens of Elliottia growing in my garden. They have been here for over ten years. During that period we have had many cold spells. Practically every winter the thermometer falls below zero, F. They have had no protection of any kind and rarely, almost never has there been any winter injury.

One Elliottia was planted in my trial garden in a carefully prepared mixture of black New Jersey peat and sand, in imitation of that of its native habitat. During this time it was carefully watered and tended. After seven years it was moved with a large ball to its present situation and again planted in a congenial soil mixture in a sunny place, near the base of my rock garden.

The other Elliottia was planted promptly in a sheltered sunny spot in untempered native Gladwyne clay, and even during dry spells was never watered.

Although the latter was slow to get started, it is now thriving lustily and is 7 feet 6 inches tall. The former plant, which was coddled, is 5 feet 10 inches tall. Evidently Elliottia likes to be let alone!

Mary G. Henry,
Gladwyne, Pa.

Two Blue Columbines

To me, the most beautiful Columbine is that of Colorado, *Aquilegia caerulea*. When you get it unadulterated, the pure blue and white combination is distinct from all other blues in the genus.

There is another blue Aquilegia of surpassing beauty, I have seen the flowers only from imported roots years ago. This is *A. glandulosa* from the Altai Mountains in Siberia and I note that Bailey remarks "one of the handsomest" but it is not for average gardens for one would have to be located where *A. caerulea* is native. But oh, it is beautiful. If one studies the genus as to habitat, it is found on all the Continents. I have never seen any of those from the Orient but these are said to have beauty yet I fear that here again it will mean altitude much as our rarest California lilies do.

E. O. Orpet,
Santa Barbara, Calif.

Sanvitalia

I tried *Sanvitalia* for the first time and was very much pleased with it. I had put in a flagstone terrace with a yew hedge on two sides. As it was very new the edges were too apparent so I planted the little zinnia-like flowers where they would fall over the stones. They were blossoming soon after being set out and they spread out and did just what they were supposed to, covering the space left for the hedge to fill in time.

The blossoms are such cheerful saucy things and they can be used in small arrangements very well.

Ruth A. Stephenson,
New Haven, Conn.

Aralia spinosa

This is the sort of tall shrub that one would scarcely think to order from a catalogue, and yet when the sultry last days of July settle down over the countryside, this near-tree puts out its great inflorescences of creamy white flowers, and takes on an almost exotic beauty. On closer inspection these may have only the structural beauty that is always the wonder of all flower forms, but who cares for such minutiae when the temperature is at 80°?

It has another time of beauty when its black berry-like fruits cover the same inflorescences which have turned to crimson or reddish purple.

In planting the tree, one must recall that it makes bare, almost stark, single trunks covered with stout prickles, and also that it does sucker and send up its stems where one does not want them. One must remember also that it can well be planted in a mass of lower shrubs above which it rises majestically, choosing if one may, shrubs with a much finer foliage, to give contrast.

Chrysanthemum, Missouri

I bought, traded and was given many different varieties of Chrysanthemums for several years and in forty-three bought several hardy 'mum plants from Youdath's in Mentor, Ohio. These have proved to be my pride and joy. Their variety called Jewelry, an introduction of their own, is the most beautiful I have. A two-year-old plant (in fact six of them) lived through subzero weather with no protection and bloomed from late September through the middle of November. It is a spray type with two-inch cushion blossoms, orchid in color and grew approximately five feet high. At the top it was well over three feet in diameter, and it is a prolific bloomer. All six plants responded well to lots of water and Vigoro and cow manure tea. I gave the plants no protection to force the blooms or while blooming.

R. O. Worrell,
Mexico, Mo.

From the Midwest Horticultural Society

Maclura pomifera

Mention of the Osage orange is always good for an argument in any company. Some will remember the glossy foliage and the long rows of trees serving as hedge and windbreak, others will remember the stout thorny branches and the mean tears in flesh and clothing they can inflict.

In early times the Osage orange was the hedge plant that bordered pastures in the days before barbed wire. A heavy row of these was sufficient to turn cattle and other animals. These hedges were developed by thick planting and then topping every few years so that a dense bushy plant was formed. This was further aided by the habit of the plant to send up root shoots. In time these hedges were no longer needed and the shoots grew and formed substantial windbreaks.

The plant is hardy, and grows on most soils. It makes an excellent tall screen that is an attractive glossy bright green even in severe droughts. It is also a very protective screen as a row of these is well-nigh impenetrable. This is advantageous for bird life, and the conservation of other animals. The thorny character and the somewhat spreading habit of the root shoots would suggest that this be used only on farms and large suburban areas where some space can be given over to it.

Eldred E. Green.

Acer platanoides Schwedleri

The red form of the Norway maple is not too often seen correctly used to

be appreciated. While authorities have decried the use of colored foliage as being an overdone fad there are some places and some exceptions. One of the best exceptions is Schwedler's maple. In the spring the red coloring of the foliage is striking. This later turns to a bronzy green, and then to a dark red as fall takes over.

During the summer the bronze color is especially appealing in large planting as parks, cemeteries, estates and as occasional specimens flanking street plantings of the green type. When used in this way the color break is especially necessary as the regularity of form might otherwise become monotonous. Properly the best use is as a foil or color break to avoid an excess of plain color.

The plant is adapted to a wide range of climate and a wide variety of soils. The form is propagated by grafting and so commands a higher price, but a relatively small number are needed. Wherever large numbers of Norway maple are used a proportion should be in Schwedler's variety.

ELDRED E. GREEN.

Ginkgo biloba

The well known Maidenhair tree is one of the plants that needs to be brought forward again and its uses pointed out. This tree as most know is one of the very few plants not known from the wild but solely as a sacred plant grown in Chinese temples. It truly can be called a living fossil as its ancestors were widespread and seemingly identical with the present species. Horticulturally the Ginkgo is a hardy tree of medium stature. In youth the tree is spire-like. For ascending effect it can be used much more advantageously than the forms of Poplar which are commoner and undesirable. After about a quarter century the Ginkgo develops some low spreading branches in addition to the tall spire of the trunk. The combination of spreading and spire habits is unique and beautiful.

It is adaptable to soils and exposures. It is also one of the best plants for city use as it can withstand crowding, poor soil, dirt, and all the other elements of a city. Industrial and commercial interests could well use many more of this proven plant. It is an asset to any planting and particularly so around buildings.

Many years ago this species was widely planted in parts of Chicago. Today these are the outstanding specimens in some of the most impossible situations where only weedy species can exist.

This is not a good shade tree but in the home grounds the dark green leaf with the shape of the leaflets of Maidenhair fern is attractive, and the height can be used to good landscape effect.

ELDRED E. GREEN.

For the End of the Year

As the evergreens begin to take their special place in the autumn landscape, a place that is even lovelier than that which they will take over later in midwinter, one is often struck with the thought that leaves on evergreens have their life span just as do the deciduous leaves that are falling to make the new brown cover for the woodland floor. *Rhododendron Fortunei* hidden in a bower of Kurume azaleas to safeguard its first years, is dropping the leaves that were formed last year, while those of *R. maximum* or even those of the small *R. ovatum* seem to have a longer span. One wonders how long it must be before the framework of Fortune's rhododendron will bend down and cover the bare skeleton that is forming with each year's new growth.

The azaleas are loosing their lush leaves of summer growth, keeping only those that lead up to the fat buds that promise flowers for the New Year ahead. *R. poukhanense* is quite bare but Kaempfer's still wears almost its full quota. *R. mucronatum* and its several forms are duller than in summer but the leaves still hold. The Kurumes show signs of autumn color on the old leaves but not enough have fallen, even on plants of such as Hinomayo, to suggest that they will be less lush by Spring. Only the true *R. indicum,* still better known as Azalea macrantha, holds all its load of shining leaves untouched as yet by the bronze and red purple which will tint them later on. *R. reticulatum* is beginning to show the bronze that will turn to dull red before all fall, but the as yet tiny plants of *R. Tschonoskii* which are supposed to turn fine colors maintain the dull green of the summer months.

Nearby, growing on the oaks, the various ivies are preparing for the winter, slowed up after their autumn burst of growth, but no signs of pink have appeared as yet on the white margins of the variegated sorts. The lovely almost white tips of *marmorata* stand out clearly against the gray of oak bark, and the clearly edged leaves of *rhomboidea variegata* make a delicate tracery on the darker trunk of the red oak that bears them up. Elsewhere the growths that were made in the end of summer show the length of that growth by their smaller sizes, and one reminds himself that next year, without fail, he must watch to see if when they begin to grow again they make a normal sized adult leaf. Or do they?

Magnolia grandiflora, beautiful enough at any time, stands in full beauty with no leaves falling, and one recalls that the leaf fall here is especially in June, while its other Southern neighbor, *M. virginiana,* is losing its leaves slowly now, as the prelude for complete drop before the winter is over, quite the contrary of its appearance in the deep South.

In contrast the Japanese *Styrax obassia* is almost bare, the ground beneath it littered with its large leaves that make the annual task of seed gathering a squirrel-like business of tossing them about while one hunts for the seeds that look so much like roasted coffee beans. The smooth-barked trunks remind one of the polished wood one sees in Japanese houses, polished, so one is told, only by rubbing with the human hand.

This business of gathering seeds from one's trees and shrubs for sending hither and yon is something of which we should do more, and any one who would like a few seeds this year or next need only write the editor. His trees came from one that once grew in Dr. Fairchild's Maryland home and have in turn been sent as seed to other gardens. One need only plant the seed out of doors in the autumn and wait the germination in the Spring. After the first two years growth is very rapid. How far north it will be hardy is not known but it could be tried like any other garden adventure.

Plant Exchange belongs to all good gardening and last Spring at the urgent behest of one member we tried to start such a column. How much came of it we shall never know, but requests did not continue to come in and so it failed after the April issue. Should it not be tried again?

The time of leaf fall is also the best time in the garden to plan the orders for shrubs and trees that may be needed just as it is also the best time to decide which must come out.

And when one is planning, one's imagination can run on and on, as it does for the editor who is a gardener

like any one else, save that he plans not only for his own garden but for the Magazine, thinking always in terms of what might be on hand against some future use as copy or as photograph.

Although for him it is a more or less purposeful, perhaps even selfish, planning, if the system could be extended to all members who would plan to have some new things each year about which they could then write in for the delectation of the rest, the Magazine would be even richer than it now is in the plant material notes that have made it quite famous in its way. What are you doing that should be reported? It may seem slight to you, but what chance reference has opened new vistas to you? What of the revival in geraniums? What of camellias? To name but two quite different plants.

Who has grown all the new named races of scabiosas? Are Drummond's phloxes once more coming into a renewed value after the war years when we so often had only mixtures? Are the Chinese pinks once more coming into a period of refinement so that we could offer as many patterns as once made them almost collectors' items? Will there be more and more morning glories to compete with those already named? What of border carnations, which are having a revival in the Pacific Coast regions? Who will risk the onerous first years of working to fix endless strains of Violas, of which we grow few as compared with Europe? Will the fine strains of Polyanthus Primroses from the Coast come East again? So one might go on and on.

We are coming to the end of another year, the end of Volume 25 for the Magazine in which were published many things as planned but from which many things were missing. Next year lies ahead and in coming to a new quarter century, we look forward with that eagerness and anticipation that seems peculiar to gardeners.

Index to Volume 25

Figures in *italics* refer to illustrations